

Global Professional + Academic Collaborative

*The necessity for global collaboration
between the design profession and
academia to create innovative solutions.*

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University of Hawai‘i at Mānoa - School of Architecture

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"We certify that we have read this Doctorate Project and that, in our opinion,
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“ For architecture to flourish as a profession, we must have a reliable and researchable base of knowledge shared among ourselves and proven in ensuring people’s health, safety, and welfare.”

- Thomas Fisher

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PREFACE

This writing represents a culmination of work and learning that has taken place over a two year period, from January 2010 to December 2011. The idea began as a desire to want more out of academia and to make a greater impact with work conducted in the academic setting. This motivation further culminated during Practicum experiences at Sasaki Associates and Perkins+Will in Boston, Massachusetts. First hand experiences and communication with colleges helped identify that there was a great lack of time for trial and error and utilization of the academic mind within the profession. A critical moment arose when I calculated that I was paying around \$26.21 an hour (\$12,584 for out-of-state graduate tuition per semester) out of my pocket to glue together models and other monotonous tasks, rather than investigating innovative design solutions that are needed in our increasingly complex world. In this moment the disparity between the professional and academic worlds of architecture were revealed.

Perception of gaps in both areas of Practice and Education has helped create a passion to identify and capitalize on the positives and strengths between the Profession and Academia to push a profession forward in an era when the design industry and education need to be poised to respond to the resource, climatic and social issues facing the design field, now and in the future. This thesis work explores synergy between the Profession and Academia to turn challenges on the horizon into opportunities for today.

DOCTORATE PROJECT STATEMENT

An Architect in the future will be immersed in a global world with global challenges and global opportunities of global proportion.

The profession and academia need to synergize in order to become global leaders within the built environment by developing innovative solutions.

ABSTRACT

THE HIGHWAY OF HIGHER EDUCATION

The rationale for the development of the American higher-education system is similar to that of the United States Highway system: there is a common desire to get to one's desired destination. The challenge and contradiction of these systems is that with a greater accessibility and quantity, quality and results have been driven down due to replicating resolutions without looking for long-term solutions. It is not desirable to sit in stand-still traffic on our highways. In America, it has been accepted for far too long that adding extra lanes of highway would curb the traffic congestion problem. We must realize that adding extra avenues along the same path is not going to resolve the problem that a growing population presents. Similarly, it is not one's desire to obtain a piece of paper that does not open doors that higher-education previously opened. The finality of a college degree is fading and continuing education is necessary to stay ahead. Deferred maintenance can no longer be the accepted practice in a world that is exponentially changing and straining. It is mandatory and urgent to radically change the education model to benefit the destination of society's future. We must create a professional and academic structure to effectively synergize people, time and money. Mentorship, research and innovation are the key to altering the destination of education. If we do not cross-pollinate these resources now, we will be stuck at a standstill, watching everyone else pass us by.

*“Revolution doesn’t happen when society
adopts new technology; it happens when
society adopts new behaviors.”*

-Here Comes Everybody

Due to many issues revolving around globalization, education must revolutionize its process to meet the demands of society. The educational sector can no longer continue adding seats in the classroom (or online) without redefining what is taught, how it is taught, who is involved and why the results of learning need to gain a more productive purpose.

We must understand the challenges and opportunities that lie ahead for academics and professionals responsible for molding the built environment. A framework must be established that scaffolds from the bottom-up providing better decision-making in the built environment and utilizes the best possible evidence to provide an innovative edge on growing competition.

If professional and academic collaboration is not a desire now,

It will be a demand later.

1.0 FUTURE FORECAST

Hindsight is 20/20

But foresight is more effective.

In order to guide decisions today and turn challenges into opportunities, we must first make assumptions about the future. The following future forecast parallels many aspects of the “Growth” alternative developed by Jim Dator; Professor, and Director of the Hawaii Research Center for Futures Studies. It must be made clear that there are various alternative futures. Although I have chosen aspects that seems most pertinent, utilizing quantity to determining qualitative effects on society, anticipated results may not be the most desirable; thus, there is an urgency to make steps of change towards a positive direction now.

1.1 2030 Hindsight

The global population is over eight billion and there is an exponential strain on resources for much of society, as the rich/poor gap continues to grow. The Middle-East, China and India are highly dynamic, thriving global communities and make up the top three world powers becoming the consumers that Americans once were. Americans have taken a back seat in global economics. TiVo and DVR created an American mindset that it is possible to rewind and start at the beginning on demand while the rest of the world continued forward carving out the future. America is no longer the place to go for world-class education and is regularly losing high achieving students to growing countries around the world that provide job placement in their continually evolving companies that place a major importance on innovation.

The American society known to be overweight and obese due to complacency continues to look for the fast fix. Plastic surgery has increasingly gained popularity. Further deferred maintenance in higher education reform has provided opportunities for foreign global corporations to tap into the financially struggling academic marketplace. America's best students are being pulled abroad to these powerful global economies to attain the best paying jobs available, sending money home to help support their families in the United States. Due to previous negligence to ask questions and look ahead, America is being faced with results that are unable to be resolved by the fast fix that culture has been accustomed to.

There is an illusion of democracy and control with ever thriving social media outlets that provide people a voice. Riots and protests are organized in America, but it is regretful to say that America has been a global puppet to outside financial influences, losing leverage in its global situation to emerging countries.

Because of a lack of financial investment for design and development, American universities have been purchased by multi-national corporations, which have replaced outdated traditional education with online entrepreneurial commerce, training, research, sports and entertainment for their personal interest. Traditional universities are hanging by a thread, becoming far inferior to the new universities. The branding and marketing that these new universities have implemented have attracted students by providing a vast network for a well paying professional job. Foreign-run education is prospering from the innovation, intellect and desperation of American citizens. China, India, and the Middle-East are utilizing vast avenues of education, from online distance learning courses, to integrated hands on involvement to capitalize on various multi-disciplinary and collaborative relationships preparing students for the demands of global competition.

Americans were consumed by new technologies and gadgets produced from Asia, such as virtual reality, video games, various other visuals and entertainment. They continue to state that “there is not enough time to get things done” and that they are “too busy.”

Americans, immersed in the trend of virtual reality and other distractions, did not consider the external forces taking place in the real world around them. American schools were in “virtual education arcades,” producing tickets of paper (college degrees) that were redeemed for incomparable rewards (underemployment or unemployment) in correlation to the student’s time and monetary investment. While American education attempted to provide for increased entrance into higher-education to handle a greater population and demand, it neglected to think about end-use for which education exists; to make education applicable to the environment in which it exists and desires to change.

Reality and the truth are coming down the tracks full force. Thankfully, it is not yet 2060.

1.2 RALLY TOGETHER FOR RESULTS

With various expectations of continued population growth it is common place to believe that there will be an elevated strain on resources and qualitative living factors due to supply and demand. The American people have rallied to construct railroads and highway systems that span the country and have placed men on the moon. We have ridden the wave of our past accomplishments. It is essential to accomplish great things once again as a whole.

The truth is, while America *was* on a great ride, we washed up on the shore and became spectators. There are other countries catching the next wave. It is our decision if we get back out there and ride it. If we start paddling too late, we will miss our opportunity and be floating around with the current of the ocean. Figuratively, (established by the 2030 Future Forecast) there is a tsunami on the horizon in which we are not going to be able to avoid. The only thing we can do is prepare for it now. We must utilize forethought to the best of our abilities to minimize the potential impact of the future. Professional and academic collaboration can assist our society to get once again attain a leadership position.

“When we’re born, we depend on others. When we’re dying, we depend on others.

What we don’t realize is, everywhere in between, we need each other even more.”

-Tuesday’s with Morrie

I believe that academia and the professional practice can do more with what it has. If we harness our strengths we can meet the challenge, but we cannot succeed by our strengths alone. We must rally around global issues collectively, on a large scale.¹

¹ Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 7.

1.3 OPPOSITES (SHOULD) ATTRACT

syn·er·gy

noun / sin rjē/
synergies, plural;

The interaction or cooperation of two or more organizations, substances, or other agents to produce a combined effect greater than the sum of their separate effects.

identifying **GAPS + STRENGTHS**

PROFESSION

physical end

built architecture

operates in the
present

known results

limited time

client's desires

results emphasis

financial profit

ACADEMIA

explorative end

paper architecture

thinks about the
past, present & future

unknown results

elastic time

intellectual growth

process emphasis

knowledge profit

2.0 GLOBAL FOCUS

*If you want to change the world,
you need to work with the world.*

There must be an avenue for those who have a passion to improve the world and make a positive impact in the global environment in which we will continually live. A different educational model is required if we want to have a global influence in the workplace and the academia setting.²

*Be a global thermostat,
Not a thermometer.*

More than seventy percent of firms participating in James Cramer's 2009 Design Intelligence survey on Setting a Global Agenda, hold a positive outlook that global practice will continue to grow in the future. There is a future to shape and this will require better solutions.³ Cultural understanding, agility to global influences and competitive forces are a few of the influential agents that need to be reckoned with. Firms such as Skidmore, Owings & Merrill (SOM) have gained global leadership by creating and suggesting avenues of added value for many cultures.⁴ With increased competition everywhere, there must be strategic value gained to current practice. Too few firms are acknowledging this factor with a focus and investment on innovation edge.

² Cramer, James. P. "Setting a Global Agenda." *Design Intelligence*, Design Futures Council, Private Report Number 218: Volume 14 Number 5. Greenway Communications LLC, 2008, 6.

³ Cramer, James. P. "Setting a Global Agenda." *Design Intelligence*, Design Futures Council, Private Report Number 218: Volume 14 Number 5. Greenway Communications LLC, 2008, 9.

⁴ Cramer, James. P. "Setting a Global Agenda." *Design Intelligence*, Design Futures Council, Private Report Number 218: Volume 14 Number 5. Greenway Communications LLC, 2008, 7.

3.0 GLOBALIZATION IN COMMON TERMS

In the simplest terms, the common thread of globalization is people, time and money.

“Our challenge is not just to improve.

It is to rethink the service paradigm.”

-James P. Cramer, Design Futures Council

3.1 PEOPLE

Unlike the great success that Americans achieved when they came together to build the railroads, the highway system and the space program, we must realize that we live in a different world from what it used to be.

The power of people “leading by example” is hugely potent.⁵ However, this potency is not always beneficial as emerging countries have used the American extravagant spending and American lifestyle to establish their own view of the “American Dream” of prosperity and success.⁶ This irresponsible aura will be a nightmare as people are elevating out of poverty. Information technology flattening the global economic playing field and the notion of that are “entitled” are results of the skewed view of the American dream. Today’s world is impacted by American attitude partly due to the United States acting as the world’s parent government.⁷ Too often we forget the power of example and mentorship. Good or bad, eyes are upon us and our actions and will continue to be. We are in competition to be the global leaders for global challenges.

⁵ Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 25.

⁶ Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 16.

⁷ Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 25.

Furthermore, people bring about the concept of the J Curve in which population growth, increases in carbon dioxide in the atmosphere, life expectancy, energy consumption, and other things will grow exponentially.⁸ These issues are prone to deferred maintenance because they do not cause a direct and immediate threat.

The Department of Homeland Security has the saying, “If you see something, say something.” Due to global issues that may not be immediate but are definitely imminent, we need to abide by this phrase on a global scale. In order to have a greater vision of our future world, we need to gain a global lens. Our country is vastly interconnected within a greater network. We must act upon the enormous potential that information technology provides us to exchange ideas. Our history shows that as a people, we are capable of making big things happen.

“It makes no sense for China to have better rail systems than us, and Singapore having better airports than us. And we just learned that China now has the fastest supercomputer on Earth – that used to be us.”

-President Barack Obama,

November 3, 2010

⁸ Tye, Kenneth A. *Visions in Global Education. A History of the Global Education Movement in the United States*. 29, *The Globalization of Curriculum and Pedagogy in Teacher Education and Schools*. Toni Fuss Kirkwood-Tucker. (New York: Peter Lang, 2009), 9.

3.2 TIME

“It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change.”

-Evolutionary Theory

America is moving slower than the rest of the world. An example of this is a massive escalator modernization project taking place in Maryland. In *Maryland Community News*, on October 20, 2010, Washington Metropolitan Transit told authorities that, “repairs were scheduled to take about six months, and it would take ten to twelve weeks for mechanics to fix each escalator because they have not been kept in a state of good repair.”⁹ In contrast, the Tianjin Meijang Convention and Exhibition Center in Tianjin, China began construction on September 15, 2009 and was completed eight months later. The startling comparison is that the convention center in China was nearly 2.5 million square feet!¹⁰

The question of forethought can conversely be raised when considering time and speed. The built environment must provide time for trial and error in design. The arrival of the TiVo and other DVRs has removed the time component for culture.¹¹ The design of built works is not like the Tivo or DVR; if we do not have the time for research, we can’t rewind and start back at the beginning after it is built. Well, it is possible, but it is a

⁹ Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 4.

¹⁰ Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 3.

¹¹ Anderson, Chris. *The Long Tail. Why the Future of Business is Selling Less of More*. (New York: Hyperion, 2008), 38.

lot more expensive! The professional work timeline needs to be frontloaded and allow for trial and error, because it is becoming much harder to keep up with the speed of development and change in developing countries and at home.

In contrast, academia is frontloaded with time for “design of our minds.” With population growth and a lack of available jobs on American soil, attendance and time spent preparing for the job market within higher education is increasing. Students attending public American universities are taking out astronomical amounts of loans due to the length of tenure combined with the inflation of traditional-educational tuition. Higher education is up shifting in the sense that high school students are taking college courses and a bachelor’s degree is no longer a differentiator like it used to be. In order for an education to be relevant in the marketplace, people must differentiate themselves by attaining a Masters or Doctorate Degree, which will come and go as status-quo similar to a Bachelor’s degree. The idea of people further increasing their knowledge is not and should not be revered as a problem; it is necessary. The real challenge lies with the job market and economy. Increasingly, we need to think of this in terms of a global model and how this time spent learning can be of greater benefit. There must be greater opportunities to tap into this time spent nurturing intellect to provide benefits during and after education to students and professional practices alike. Academia is about long-term thinking. The profession has a greater demand to make money by increasing their turn around speed and efficiency based on economic concerns.

3.3 MONEY

“America needs to think long term just at a time when long-term thinking has never been more difficult to achieve.”

-South Carolina Senator, Lindsey Graham

Recently America has suffered from an economic crisis. TreasuryDirect.Gov states that the “Outstanding Public Debt of the United States” is 14,696,963,569,782.73 as of September 15, 2011. This fiscal situation, combined with the world’s environmental and global situation, is not an opportune time for businesses to spend time and money looking ahead when they are fixated on immediate economic circumstances.¹² This is why there is a need for a collective response from public-private partnerships. Challenges near and far are too big for individual segments of the profession and academic to attack.

Similar to the housing market crash in 2008, where everyone and anyone could get a home loan and then bad bets and investments were made with capital, the same is happening in education. As the housing market bubble popped, the same rise and fall is possible in the higher educational market with student loans if there is not a wiser investment of time, money and human capital to provide better model of reception for its knowledge capital creating a greater value and purpose that channels into greater benefit. Americans are required to become better educated to not only secure, but keep a well-paying job. America needs to invest in education and provide better results.

¹² Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 31.

*“America can prosper based on
brainpower; properly prepared and
properly applied.”*

-Thomas Friedman

As Evolution Theory stated, we must adapt having the agility and ability to adapt to our environment. A deep rooted fiscal problem makes it very challenging to promote progressive change. In order to thrive in a globalized environment, change must be promoted and directed rather than forced. The truth is change often occurs unwillingly. The choice is ours: America can choose to meet the challenges it is faces and take steps to correct its destination or keep with the status quo and be on a path of failure.¹³ But be encouraged, optimism comes from America’s track record of rising to great challenges.¹⁴

¹³ Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 23.

¹⁴ Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 26.

4.0 BUILDING THE COMMON THREAD

Collectively, these three basic roots of globalization (people, time and money) are the cause, effect and potentially the solution to global challenges if utilized collectively.

Globalization (in common terms)		
people →	+ solutions	= Capital³
time →	mentorship	= human capital
money →	research	= knowledge capital
	innovation	= financial capital

A single strand is weak,

A collective cord can overcome.

4.1 MENTORSHIP

Resolve should be focused on the returns on investments from one another. By realizing the benefits of individual threads working together, we can then propel everyone involved in the discipline of the built environment forward. The profession and academia must work together and invest in one another so all are able to achieve their goals.

*“As iron sharpens iron,
so one person sharpens another”
- Proverbs 27:17*

The beauty of mentoring is the benefit of gaining something that one did not enter the relationship with and not knowing what this might be. As shown above, relationships and involvement between the profession and academia can surely produce benefits that the other may be lacking and is unable to obtain on their own. Unforeseen benefits of professional and academic collaboration can pose game-changing opportunities. We must take a look at these vertical relationships.

Seventeen to twenty-two percent of firms are eliminating positions of interns and staff with less than six years of experience.¹⁵ This means there will be a great loss of design leaders in the next generation if we do not provide an avenue for the transfer of knowledge. There is a feeling by many practitioners that they do not have an obligation

¹⁵ Stewart, RK. "Mentoring 21st Century Architects *Design Intelligence - Trends, Strategies and Research for the Design Professional*". (2011), http://www.di.net/articles/archive/mentoring_21st-century_architects/. (accessed May 3, 2011), 1.

to be mentors.¹⁶ Our society's financial status has caused many firm leaders to continue to be sensitive to economic demands as the architecture profession has moved from a labor-intensive past to a capital-intensive future.¹⁷ Careful attention to staff productivity and overhead absorb the time that may otherwise be spent mentoring future leaders within a firm.¹⁸ While top-down mentorship is an important issue, a two-way relationship is essential to successful mentoring relationships. The strength of academia is its research capabilities.

¹⁶ Stewart, RK. "Mentoring 21st Century Architects *Design Intelligence - Trends, Strategies and Research for the Design Professional*". (2011), http://www.di.net/articles/archive/mentoring_21st-century_architects/. (accessed May 3, 2011), 1.

¹⁷ Stewart, RK. "Mentoring 21st Century Architects *Design Intelligence - Trends, Strategies and Research for the Design Professional*". (2011), http://www.di.net/articles/archive/mentoring_21st-century_architects/. (accessed May 3, 2011), 1.

¹⁸ Stewart, RK. "Mentoring 21st Century Architects *Design Intelligence - Trends, Strategies and Research for the Design Professional*". (2011), http://www.di.net/articles/archive/mentoring_21st-century_architects/. (accessed May 3, 2011), 3.

4.2 RESEARCH

Merriam-Webster defines research as “*studious inquiry or examination; especially investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws.*” The future of design leadership in innovation must be a commitment to invest time for research to elevate quality. Such investment in academia where new knowledge is un-rooted is integral in providing a bottom-up transfer of newly cultivated knowledge resources.

Research is often systematic. A scientific method is often used to derive measurable evidence that justifies reasoning. Meaningful research creates a level of engagement that transforms not only client-designer relationships but encapsulates academia into an engaged partnership between clients, practice and academia. Through research, solutions can be identified in a rational manner based on the best available evidence, making design more relevant to solve future challenges.¹⁹ Research combined with mentorship is a tool that can percolate academia and the profession in a mutually beneficial relationship, elevating both to a higher level.

“As a leader, you're responsible to look ahead, sense impending change, and make the course adjustments necessary to keep your organization on track. Remember, you cannot see the future with your nose to the grindstone. To lead strategically, it's essential to withdraw from the urgency of day-to-day business in order to plan the direction of your organization's future.” - Giant Impact: Strategic Leaders Look Farther Ahead

¹⁹ Debajyoti, Pati, Ph.D.. "Research in Practice *Design Intelligence - Trends, Strategies and Research for the Design Professional*". (2011), http://www.di.net/articles/archive/research_in_practice/. (accessed May 3, 2011), 3.

4.3 INNOVATION

In order to have resolve America will need to utilize mentorship and applied research to gain opportunities for innovative design leadership leading to economic value in a global world. Globalization mixed with technological advances has provided greater connectivity. Availability, access and quantity of various options will create an increasing culture of competition. An increasing global population creates competition on many levels. Businesses will need to innovate and restructure to remain competitive.

We must tap into the potential of our industry leaders and do-ers. Innovation is about change and doing things differently to increase success. Developing a new process and a way of organizing can change the way we operate. This may in return increase the chances of success for an individual, company, institution, economy or perhaps the global community.²⁰ In order to remain competitive we must innovate, driving change into ourselves to impact the way we work and what we produce.²¹

²⁰ Harvard Business Publishing, "Innovation Center."
2009.<http://corporatelearning.hbsp.org/corporate/products-and-services/collections/product-innovation-center-overview.html> (accessed May 3, 2011).

²¹ Scott, Anthony. "Innovation Center – Strategy Video Transcript."
2008.http://ww3.harvardbusiness.org/corporate/demos/innovation/video/videoTranscripts/Transcript_Any.html (accessed May 3, 2011).

5.0 DEFERRED MAINTENANCE

A Singaporean economist Tan Kong Yam stated to Thomas Friedman in a 2011 interview that small countries with big neighbors are like living in a grass hut without any insulation. They feel every change of outside elements. He stated that Americans live in brick houses with central heating and don't have to be so responsive.²² This analogy is very pertinent to outside influence. Due to deferred maintenance in America, our façade has been riddled with holes. Information technology has further brought about porous walls and we too will feel the increasing influence from our big neighbors.

You cannot adapt unless you are constantly monitoring your environment.²³ Our monitoring must have a global vision and be continuous. The idea of tenure and attaining a job for forty years until retirement is gone. We must have the attitude that we are not good enough! We cannot rest and let the grass grow under our feet.

Deferred maintenance is caused by a lack of urgency. The more we put off challenges, the greater the cost will be for the next generation. Unlike the past when we were sparked into action by the bombing of Pearl Harbor, the speeches of Adolf Hitler or parades of ballistic missiles in Moscow, today's major globalization and environmental problems do not have the same immediate motivators that shock people into action.²⁴ Today we are in a chronic condition and we must recognize the challenges.²⁵

²² Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 27.

²³ Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 27.

²⁴ Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 31.

²⁵ Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 32.

In order to gain an advantage one must identify where opportunities lie. In racing, “you win in the turns.” In driver education class, students learn not to pass on the turns. But this is where one gains speed and puts distance between themselves and the competition. Anticipating a line and flexibility to adjust, provides success to pull ahead. Similarly, we must capitalize in turning points to gain an advantage. The achievements of people like Warren Buffet, Bill Gates and Steve Jobs would not have been possible if they had not taken highly motivated risks. But without the help from the public sector, their success would not have been realized.²⁶

²⁶ Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 44.

6.0 DRIVING CHANGE

We must ask ourselves, what is wrong and what we can do to make it right. The opportunities are hiding in plain sight. We are getting so much less than we can, should and must get out of time, money and people connecting professional and academic relationships. Two imperative questions are, “What world are we living in?” and “What can we do to thrive in it?”²⁷ In a world that is changing faster than ever, these questions matter more than ever. Issues revolving around a population growth model, such as competition, the environment and humanitarian well-being cannot be ignored. Some issues you can bounce back from, but these issues have long term, even detrimental consequences.

This urgency for change is due to a lack of time and resources to waste (not that we ever had or should) which might have been the case twenty years ago.²⁸ Being in a global world our goal can no longer be to merely solve and influence America’s problems. There must be a global change agent in the design discipline to influence global design decisions as the American institution *has been* influential in the political arena. I emphasize “*has been*” as America was once powerful, but will not continue to be if it does not excel the projection of its future.

²⁷ Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 9.

²⁸ Friedman, Thomas L, and Michael Mandelbaum. *That Used To Be Us. How America Fell Behind in the World it Invented and How We Can Come Back*. (New York: Farrar, Straus and Giroux, 2011), 9.

7.0 MONITORING COLLABORATIVE ENVIRONMENTS

Establishing a transformative cross pollination of ideas requires the investigation of existing professional and academic exchange within the design profession and across other industries that utilize research, mentorship and/or innovation. There have been successful relationships, research and innovation models but there are communication, collaborative gaps and overarching obstructions that prohibit a maximum potential to be reached.

Case-studies can help identify the strengths and shortcomings that occur within different types of collaboration and partnerships. By defining the gaps, we can amend the relationship between the profession and academia resulting in a truly collaborative link that will be beneficial to both parties and, most importantly, generations to come.

8.0 Academic Emersion in the Profession

9.0 Architecture Design-Build Relationships

10.0 Academic Research Entities (non-architecture)

11.0 Professional Research Entities

8.0 Academic Emersion in the Profession

8.1 Boston Architectural College

The Boston Architecture College is founded on the basis of concurrent learning. Students get experiential practice while working in an office and get intellectual learning in the classroom.²⁹ During an interview with Len Charney, Head of Practice at the BAC, he stated, “It is tough to engage practitioners *where* (in their workplace) they are committed to involvement because firms are there to make money... you must find firms that recognize research and find opportunities to value academic resources.” I asked him for an example of one of their academic and professional relationships. He mentioned that the BAC did a sustainability assessment for Feingold Alexander + Associates and held a preliminary design critique to impact the potential design options.

Another example of first hand professional and academic collaboration is their “Gateway Initiative.” The BAC forms a mock firm environment consisting of five students and one faculty practitioner within a comprehensive studio. They find organizations that have needs and works with the Mayor’s office for community development. Work is often interdisciplinary and often takes place in the pre feasibility phase. The BAC has also entered national competitions but has yet to win.³⁰

Feedback received from practitioners’ stated that it was “inspiring to work with students” and that they had gained an “appreciation from students.”³¹ Len stated that this was a result from work in the office environment often being “dreary and uninspiring.”

²⁹ Boston Architectural College. "About the Boston Architectural College." <http://www.the-bac.edu/x309.xml> (accessed February 16, 2010).

³⁰ Charney, Len, interview by Austin Poe. *Head of Practice, Boston Architectural College* (March 1, 2011).

³¹ Charney, Len, interview by Austin Poe. *Head of Practice, Boston Architectural College* (March 1, 2011).

Logistically the students generated and the practitioners supervised. If the students do win a competition, they will partner with the firm to complete the work.³²

“There is a reservoir of pent up knowledge
and offerings between the two.”

- Len Charney, Head of Practice at the BAC



³² Charney, Len, interview by Austin Poe. *Head of Practice, Boston Architectural College* (March 1, 2011).

8.2 University of Hawaii at Manoa School of Architecture:

Professional Studio & Global Track/China Option

The University of Hawaii School of Architecture (UH SoA) Professional Studio offers three options for professional and research experiences. The descriptions below are stated on the architecture school's website:

ARCH 547C PROFESSIONAL STUDIO: COMMUNITY DESIGN |

The studio involves professional research and design on outreach community projects that may include architectural design, technological innovation, historic preservation, urban design, or other topics that consults and benefits a specific community user group.

ARCH 547P PROFESSIONAL STUDIO: PRACTICUM |

The studio combines scholarly and research activity integrated with the activities of a professional architecture, engineering, planning, construction, or development firm. Practice activities are guided by an adjunct faculty member and selected firm mentors. A focus is given to issues of leadership, critical and creative thinking, and the influence of culture on design decisions. Firms include major U.S. firms with approximately one third located internationally (e.g., London, New York, San Francisco, Hawai'i, Tokyo, Hong Kong, Shanghai).

ARCH 547E PROFESSIONAL STUDIO: ALTERNATIVE |

The studio combines research and design under the professional guidance of a licensed professional in a location chosen by the student and developed as an Alternative Experience to relate the students chosen research for the DArch Project to a professional work environment.

The next track. The University of Hawaii at Manoa – School of Architecture is beginning a Global Track/China Option slated for 2012. The course titles, credits and Student Performance Criteria are identical to students who are not in the Global track (Site). Architectural Studios will likely focus on current and emerging Global/China design challenges as focus topics to further students' understanding of Global/China issues and desire to integrate interactive technologies.

Hawaii students must take Professional Studio (Community Design Center, a Practicum Experience or an Alternative Experience) which they will be required to enroll, in the summer between first and second year. The second academic year is physically located on the Tongji University campus in Shanghai, China. All courses taught in the Second Year mirror the main campus (with little exceptions). The coursework offered at Tongji is taught by University of Hawaii faculty with Tongji faculty assistance when deemed appropriate.

Upon completion of the Second Year, all students within the Global/China track must enroll through UHM for summer session and encouraged to enroll in a second U.S. Practicum experience. Students in need of improved design communication will enroll in the Community Design Center and will take a new course called Advanced Design Communication III. There is a choice between the Community Design Center or Practicum (this is consistent with the current SoA curriculum).

The Third Year is taught in Hawaii where students will take Global Architecture Studio and Advanced Global Practice, both are newly developed courses. Advanced Practice is being renamed Advanced U.S. Practice to maintain consistency in the global terminology.

The dual-degree China Track states that the curriculum mirrors the standards of the current curriculum yet embraces an international/global environment as an identified option within the program. There will be an increase in students attending Practicum firms in Shanghai with a slightly modified curriculum. The document states that students transferring in will meet existing admission standards.

Funding is budgeted to provide increased administrative responsibilities. Additional faculty will teach on the Tongji campus on a visiting basis and have residency limited to 2-3 weeks. Faculty will be provided with University housing while at Tongji paid by the UHM SoA. All travel and living expenses are also met by the UHM SoA. Faculty residing one year in Shanghai will return to the main campus two or three times per academic year for school events. All participating faculty will continue to have support for research and scholarship from the SoA at UHM.³³

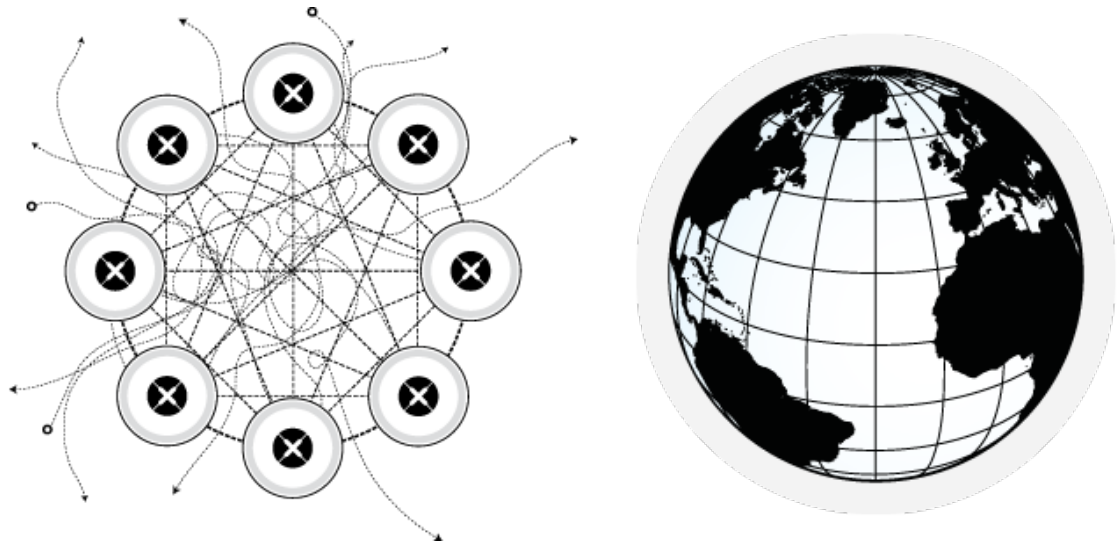


UNIVERSITY
of HAWAII[®]
MĀNOA

³³ “Agreement on the Establishment of a Dual Degree and Articulation Agreement between Tongji University, College of Architecture and Urban Planning and University of Hawaii at Manoa, School of Architecture.” (August 16, 2011 Draft)

8.3 Columbia University : Studio X

Studio X is a global network initiative with the basic idea of “an open space of collaborative work and exchange of ideas.”³⁴ It is a place for new forms of creativity to battle emerging challenges. There are multiple locations around the world, situated in the heart of the cities to create an interface between the academic setting and the urban fabric itself.³⁵ Studio X looks to explore the future of cities and want to create a platform for research and debate. Studio X prepares the next generation of designers to be able to curb tribulations in the future.³⁶



Numerous relationships have been formed with local professionals to converse about the future of society, from large to small scales. This think-tank blends different ideas to support new forms of creativity. These open spaces house everything from books, global interface, galleries, lectures, work space, meeting rooms, offices and a very

³⁴ Columbia University, Graduate School of Architecture, Planning and Preservation. "About Studio X." 2011.<http://www.arch.columbia.edu/studiox/about> (accessed May 3, 2011).

³⁵ Columbia University, Graduate School of Architecture, Planning and Preservation. "About Studio X." 2011.<http://www.arch.columbia.edu/studiox/about> (accessed May 3, 2011).

³⁶ Columbia University, Graduate School of Architecture, Planning and Preservation. "About Studio X." 2011.<http://www.arch.columbia.edu/studiox/about> (accessed May 3, 2011).

necessary coffee bar. In short, Studio X has become a vital cultural space open to the community. The space is where passionate people and ideas meet to reflect on the urgent needs of tomorrow.³⁷ This think-tank is successful because it employs unique strengths of every individual on each and every project.



³⁷ Columbia University, Graduate School of Architecture, Planning and Preservation. "About Studio X." 2011. <http://www.arch.columbia.edu/studiox/about> (accessed May 3, 2011).

8.4 Center for Architecture Science and Ecology: SOM+RPI

Skidmore, Owings & Merrill is driven by a fierce competition from within, maintaining design as a top priority within its office.³⁸ To stay a cut above competition, SOM partnered with Rensselaer Polytechnic Institute in 2008 to create a new research initiative called, The Center for Architecture Science and Ecology (CASE) to evolve their sustainable commitment. CASE is aggressively investigating net-zero capabilities in anticipation of energy goals adopted by the US and worldwide.³⁹ They are tapping into the synergy between the profession and academia to develop technologies and bring them to market. The program goes beyond conventional graduate programs by investing in collaborations with academic researchers who are investigating emerging technologies.⁴⁰

CASE is a part of SOM's Wall Street Office in New York and is viewed as a complimentary practice which is collaborated with on a daily basis.⁴¹ The structure of the organization currently entails two professional principals (Ken Lewis, SOM Managing Director and Nicholas Holt, SOM Technical Director) along with RPI Professor/CASE Director Anna Dyson and Associate Professor, Jason Vollen. There are about twenty-four PhD, Masters and Undergraduate students that actively research and attend classes.⁴² Holt believes that, "the architecture profession has not taken advantage of its power and responsibility to truly innovate." SOM and RPI believe that the CASE model can change that.

³⁸ Hurley, Amanda K.. "The Architect 50*Architect Magazine*". (May 2009), http://www.nxtbook.com/nxtbooks/hanleywood/architect_200905/#/46. (accessed December 8, 2010), 47.

³⁹ Holt, Nicholas. "Practical Science." *Architecture Boston*, Fall 2011. <http://www.architects.org/architectureboston/articles/practical-science> (accessed September 5, 2011), 21.

⁴⁰ Center for Architecture Science and Ecology, "Overview." Accessed November 8, 2011. <http://www.case.rpi.edu/curriculum.html>.

⁴¹ Holt, Nicholas. "Practical Science." *Architecture Boston*, Fall 2011. <http://www.architects.org/architectureboston/articles/practical-science> (accessed September 5, 2011), 21.

⁴² Holt, Nicholas. "Practical Science." *Architecture Boston*, Fall 2011. <http://www.architects.org/architectureboston/articles/practical-science> (accessed September 5, 2011), 21.

CASE is currently featuring the following research on their website

case.rip.edu;⁴³

- *Next Generation High-Efficiency Solar Power Systems for Building Envelopes*
- *Environmental Control and Information Exchange through the Integration of Electroactive Polymers to Dynamic Building Envelopes*

CASE has selected the following topics for further development;

- *Building-Integrated Wind Generation and Structural Optimization through Amplification of Air Flow*
- *Active Hydroponic Systems for Air purification & Energy reduction in Building Systems*
- *Systemic Structural Intervention for Regenerative Urban Development along Tropical Coastlines*
- *Solar Building Envelope System for Water Recycling, Purification & Thermal Control*
- *Environmental Control System with Intelligent Desiccation for Thermal Comfort, Energy Generation and Water Recuperation*
- *Urban Heat Island Effect, Urban Morphology and Building Energy*
- *Agricultural Waste By-Products for Desiccant Building Materials in Hot Humid Climates*
- *Parametric Design Studio*
- *Advanced EcoCeramic Structural Systems*
- *Advanced EcoCeramic Envelope Systems*

⁴³ Center for Architecture Science and Ecology, "Home." Accessed November 8, 2011. <http://www.case.rpi.edu/home.html>.

Much of the research is funded by the United States Department of Energy; New York State Energy Research and Development Authority; New York State Office of Science, Technology and Academic Research. Some projects also receive support from the American Institute of Architects and the Boston Society of Architects Research Grant. Select works are done in collaboration with the University of Arizona.⁴⁴
(Sponsored research and funding can be found in Appendix I)



⁴⁴ Center for Architecture Science and Ecology, "Sponsored Research." Accessed November 8, 2011. <http://www.case.rpi.edu/research.html>.

9.0 Architecture Design-Build Relationships

9.1 University of Auburn : Rural Studio

The Rural Studio was conceived as a strategy to improve living conditions while providing practical experience for students to collaborate. This gives students a chance to work with real clients and gain hands-on experience to improve the quality of life for less fortunate community members. They utilize money provided through donations and grants to offer socially responsible architecture for residents in Hale County.⁴⁵

"If architecture is going to nudge, cajole, and inspire a community to challenge the status quo into making responsible changes, it will take the subversive leadership of academics and practitioners who keep reminding students of the profession's responsibilities."

– Samuel Mockbee

RuralStudio

⁴⁵ University of Auburn, College of Architecture, Design and Construction. "Rural Studio." <http://www.cadc.auburn.edu/rural-studio/Default.aspx?path=Gallery%2fPurpose%2fObjective%2f> (accessed May 3, 2011).

9.2 Jersey Devil Design Build

The Jersey Devil design-build allows students to construct their own design and be immersed in the culture by living in Airstream trailers and tents. This arrangement provides the students the ability to make adjustments in real time, simulating the actual building process. Participants are encouraged to critique conventional practice, both the process of making and defining architecture itself.⁴⁶

Jersey Devil
Design/Build

⁴⁶ Piedmont-Palladino, Susan and Branch, Mark Allen. "About."
<http://www.jerseydevildesignbuild.com/about2/bout2.html> (accessed May 3, 2011).

10.0 Academic Research Entities (non-architecture)

10.1 Harvard and MIT : Broad Institute

The Broad has a belief that this generation has a historic opportunity and responsibility to dramatically transform and accelerate the understanding and treatment of disease.⁴⁷ The Broad states that there is a need for an ambitious interdisciplinary research institution that is able to attack challenges by being flexible, working boldly, sharing openly and reaching globally.⁴⁸ The aim is to create a culture of creativity by gaining input from all participants, regardless of age or title.⁴⁹ The organization consists of three components; core member laboratories, programs and platforms.

Core member laboratories are physically adjacent from scientists in other disciplines to encourage collaboration across a range of projects. Program initiatives unite people around a shared focus and create platforms that bring in the expertise needed from companies needed to pursue projects that could not otherwise be pursued in a single academic laboratory.⁵⁰

“The unique cross-institutional and cross-disciplinary culture of the Broad Institute requires a leadership team committed to empowering everyone here with the ability to contribute their diverse talents to the singular purpose of transforming medicine.”

-Broad Institute



⁴⁷ Broad Institute, "Our Approach." 2010.<http://www.broadinstitute.org/what-is-broad/broad-approach> (accessed May 3, 2011).

⁴⁸ Broad Institute, "Our Approach." 2010.<http://www.broadinstitute.org/what-is-broad/broad-approach> (accessed May 3, 2011).

⁴⁹ Broad Institute, "Our Approach." 2010.<http://www.broadinstitute.org/what-is-broad/broad-approach> (accessed May 3, 2011).

⁵⁰ Broad Institute, "Our Approach." 2010.<http://www.broadinstitute.org/what-is-broad/broad-approach> (accessed May 3, 2011).

10.2 MIT : Whitehead Center for the Genome Research

The Whitehead is the cornerstone to the Broad Institute and is an environment in which to take risks. Through risks, the Center for Genome Research at the Whitehead has been able to sequence the human genome and have played a leadership role in sequencing organisms such as the mouse. They devise strategies, develop tools and map information, all utilized to advance genomics. They credit their success from their ability to tap into the broader MIT community.⁵¹

“If I hadn’t fallen into this community, there is simply no way in the world that I could have done a tenth of the things that I’ve had the pleasure to do in my career. The Whitehead is an extraordinary confident community that knows what its standards are about and is not afraid to take bets on young people.”

– Eric Lander, Founder

"I preside over what is basically an artists' colony. What we do here at Whitehead is, attract the best possible intellectual capital and empower maximally creative—really wildly creative—individuals to realize their dreams within these walls."

– David C. Page, Director



WHITEHEAD INSTITUTE

⁵¹ Whitehead Institute, "About Whitehead." Last modified October 04, 2011. Accessed November 7, 2011. <http://www.wi.mit.edu/about/index.html>.

10.3 Harvard Business School : Innovation Center

The Harvard Business School realized a need for innovation and created a premier center of insights, ideas and tools to help push innovation across organizations. The emphasis of the school is to be strategic and systematic, drawing on a vast pool of experts, students and companies.

The benefits of working with the school are access to the “manager’s toolkit”.⁵² This is where you can get guidance and tips about innovation in different situations and scenarios. The team members collaborate in discussions and take the information to target audiences to support growth; this taps into experts foremost thought.

The innovation center provides a collection of advice, tools and fresh ideas on design. This is broken down into three areas. 1. Strategy: identifies opportunities and a plan of attack. Services provided are facilitated discussions on site over a two-day period to meet with stakeholders and define specific goals. 2. Management: Creates situations that foster creativity and compile results gaining management input from executives. 3. Process: Examines the information collected, prototypes ideas and collaborates with the consumer.⁵³ The solutions are developed and may take the form in the following;

Need Analysis

In-person meetings to uncover audience attributes and your business goals.

Design Guidelines

To shape the instructional approach and selection of learning technologies.

⁵² Harvard Business Publishing, "Innovation Center." 2009.<http://corporatelearning.hbsp.org/corporate/products-and-services/collections/product-innovation-center-overview.html> (accessed May 3, 2011).

⁵³ Harvard Business Publishing, "Innovation Center." 2009.<http://corporatelearning.hbsp.org/corporate/products-and-services/collections/product-innovation-center-overview.html> (accessed May 3, 2011).

Learning Components

Select offerings from the Harvard Business Publishing library, including simulations, learning courseware, case studies, podcasts, and access to Harvard Business School experts.

Technical Planning

A roadmap for solution delivery, including custom portals, is created.

Program Design

Mapped to a pedagogy that builds to the right learning outcomes.

Assessment Tools

Tracking, testing, and reporting to confirm the program goals are met and metrics are captured.⁵⁴

The HBS Innovation Center has established a vast client list whom they consult;
 AT&T // BASF // Defense Acquisition University // Deloitte // Dell // Ford Motor
 Company // General Mills // Hewitt Associates // Hormel // Humana, Inc. //
 Hyatt Hotels & Resorts // Intel // KPMG // Mercer // Merck // Miller Brewing
 Company // Novartis // PetSmart // Pfizer // Sanford Health // Sanofi-Aventis //
 Seagate Technology // Symantec // U.S. Veterans Administration



⁵⁴ Harvard Business School, "Solution Design." Last modified 2010. Accessed November 10, 2011.
http://ww3.harvardbusiness.org/corporate/assets/content/15699_CL_SolutionDesign_Sheet_Jan10.pdf.

11.0 Professional Research Entities

11.1 HKS : Center for Advanced Design Research & Evaluation

CADRE is a full-time research castor that was initiated by HKS. This full-time commitment to research is a new development in architectural practice. Furthermore, it is a non-profit research entity that is open to sharing its knowledge. This center reduces the gap between knowledge generation and knowledge consumption in a production setting.⁵⁵ The idea of combining findings from others combined with one's own knowledge (utilizing quick turnaround) creates a framework that provides just-in-time implementation into *current* projects! This adds a great value to the firm as society continually perceives research as adding significant value. This situates HKS as an informed practice with clients willing to pay a premium for their gained expertise.⁵⁶ There is a justifiable desire to learn at a research institution and also an attraction for cutting edge medical treatment in academic medical centers from patients battling illness.⁵⁷ This "cutting edge effect" that research provides carries through our culture as people increasingly value new knowledge.



⁵⁵ Debajyoti, Pati, Ph.D.. "Research in Practice *Design Intelligence - Trends, Strategies and Research for the Design Professional*". (2011), http://www.di.net/articles/archive/research_in_practice/. (accessed May 3, 2011), 4.

⁵⁶ Debajyoti, Pati, Ph.D.. "Research in Practice *Design Intelligence - Trends, Strategies and Research for the Design Professional*". (2011), http://www.di.net/articles/archive/research_in_practice/. (accessed May 3, 2011), 5.

⁵⁷ Debajyoti, Pati, Ph.D.. "Research in Practice *Design Intelligence - Trends, Strategies and Research for the Design Professional*". (2011), http://www.di.net/articles/archive/research_in_practice/. (accessed May 3, 2011), 5.

11.2 OMA : AMO

OMA is a leading multidisciplinary firm that reaches globally, investigating architecture, urbanism and cultural analysis. AMO is the firm's counterpart that works out of the Netherlands office. They understand that OMA is rooted in the realization of buildings and master plans and thus work beyond the traditional boundary of architectural practice.⁵⁸ Often working in parallel to OMA's clients, the AMO group provides further ammunition through the investigation of media, politics, sociology, renewable energy, technology, fashion, publishing and graphic design.⁵⁹ AMO explores new possibilities to fertilize the work of OMA with intelligent consultation. Their versatile client list includes Prada, Universal Studios, IKEA and Harvard University.⁶⁰ The similarity of these clients is that they themselves are all leaders within their own category, showing the value of foresight on success.



⁵⁸ OMA, "OMA*AMO."

http://www.oma.eu/index.php?option=com_content&view=article&id=3&Itemid=1 (accessed May 3, 2011).

⁵⁹ OMA, "OMA*AMO."

http://www.oma.eu/index.php?option=com_content&view=article&id=3&Itemid=1 (accessed May 3, 2011).

⁶⁰ OMA, "OMA*AMO."

http://www.oma.eu/index.php?option=com_content&view=article&id=3&Itemid=1 (accessed May 3, 2011).

11.3 Perkins + Will

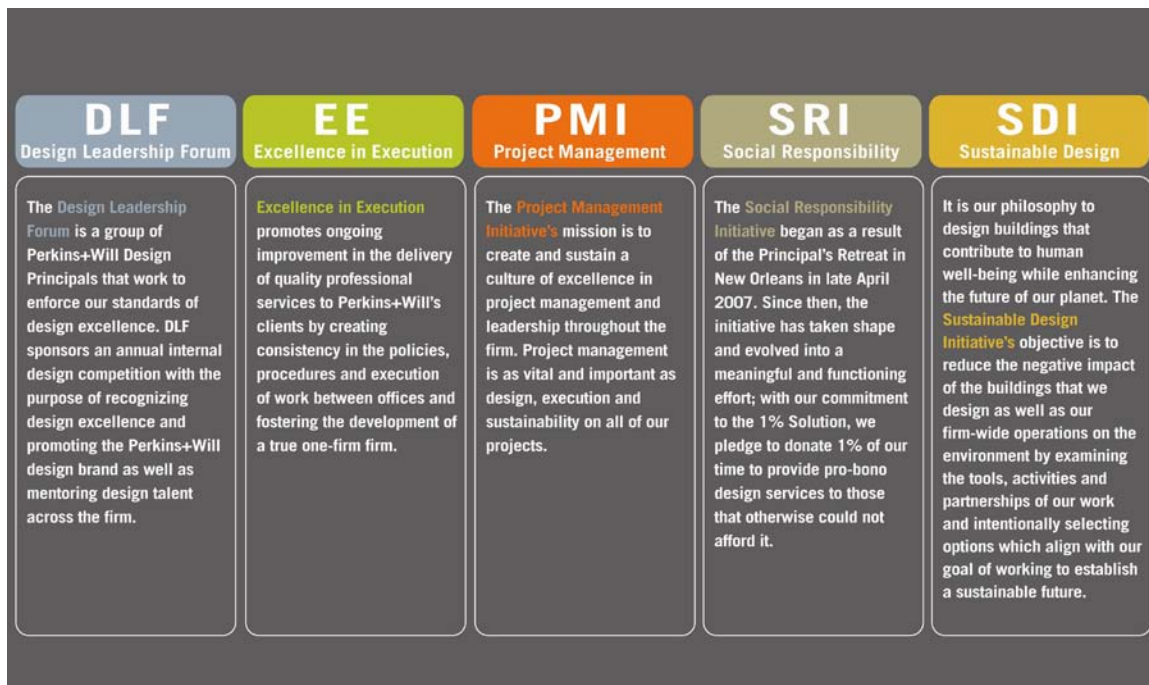
Perkins + Will has grown by about 500% since 1995. President and CEO, Phil Harrison, attributes their success to being rooted in qualitative factors such as design excellence and environmental responsibility. The practice has developed multiple initiatives such as The Design Leadership Forum, Excellence in Execution, Project Management, Social Responsibility and Sustainable Design. The latest addition to the initiatives is the Innovation Initiative (analysed in case study 11.3A).

Perkins+Will is a leading multidisciplinary firm that reaches globally. Their services include architecture, branded environments, interior design, planning and strategies, preservation and reuse, as well as urban design. Beyond spanning of the design practices the firm has further grown due to a deep investment from the middle-east corporate tycoon DAR. CEO Phil Harrison states that they have a higher-value of design due to their “strategic growth”. They have expanded around the world due to acquisitions, making them draw closer to their clients and by working with-in rather than orchestrating with different architects.⁶¹ The firms then become part of the cultural fabric in which they acquire practices and hope to practice.

The firm has maintained a belief in innovative design thought the convergence of design, technology and research.⁶² The Perkins+Will practice has developed numerous initiatives to push the firm forward. Initiatives involve design, innovation, sustainability, interdisciplinary efforts and social responsibility. The aim is to be proactive through the exploration of new methods.

⁶¹ Hurley, Amanda K.. "The Architect 50*Architect Magazine*". (May 2009), http://www.nxtbook.com/nxtbooks/hanleywood/architect_200905/#/46. (accessed December 8, 2010), 52.

⁶² Perkins Will, "Innovation." <http://www.perkinswill.com/purpose/innovation.html>. (accessed October 26, 2011).



11.3A Innovation Incubator

Within the Innovation Initiative lies the Innovation Incubator. This initiative begins with a micro-grant application. This application is completed by individuals or a small group of employees within the firm that wish to explore new methods of design that will further develop and benefit the Perkins+Will family. If approved, the projects are typically provided \$1,000 and 40 hours of paid time to invest in their research. Results and findings are then published in the bi-annual Perkins+Will Research Journal. In May 2010, Research Journal Volume 02.01 published work investigating the design of complex curtain wall geometry; effects of heat flow and moisture analysis for exterior enclosures; comparative environmental and economic analysis of flooring materials; characteristics and potential functioning of hygroscopic building envelope and utilization of wastewater for urban farming.⁶³

⁶³ Perkins Will, "Research." Last modified 2010. Accessed November 8, 2011.
<http://www.perkinswill.com/research/research-journal-vol.-02.01.html>.

11.3B Healthcare Think Tank

The Healthcare Think Tank is an annual gathering healthcare experts from all of Perkins+Will offices, designed to collect knowledge and resources to integrate all best practice ideas.⁶⁴ This collaborative approach to innovation traditionally focuses on current work but is now taking a forward thinking approach to drive and define innovation. Scenarios look fifty years out to inform the more immediate planning and design over the next two decades.⁶⁵

The goal of this gathering is to share and leverage expertise through cross-fertilization of ideas and concepts. They define, develop and catalog all information through the use of presentations, charrettes and small breakout sessions.⁶⁶ The foundation of discussion is developed on key issues, design considerations, federal guidelines, typical program equipment and typical staff activities within the larger climatic, financial, geographical and cultural influences.⁶⁷ These key factors that will precipitate change are then prompted by questions of privacy/visibility, geometry, advantages and future flexibility.⁶⁸ Each group (consisting of P+W employees, healthcare experts and clients) has a distributed set of tools and lenses provided by each member. These perspectives

⁶⁴ Kuttaiah, Bynum, Guenther, "Healthcare Think Tank : A Collaborative Approach to Innovation." *Perkins + Will Research Journal* 01.01, no. (2009), 14.

⁶⁵ Kuttaiah, Bynum, Guenther, "Healthcare Think Tank : A Collaborative Approach to Innovation." *Perkins + Will Research Journal* 01.01, no. (2009), 18.

⁶⁶ Kuttaiah, Bynum, Guenther, "Healthcare Think Tank : A Collaborative Approach to Innovation." *Perkins + Will Research Journal* 01.01, no. (2009), 14.

⁶⁷ Kuttaiah, Bynum, Guenther, "Healthcare Think Tank : A Collaborative Approach to Innovation." *Perkins + Will Research Journal* 01.01, no. (2009), 18.

⁶⁸ Kuttaiah, Bynum, Guenther, "Healthcare Think Tank : A Collaborative Approach to Innovation." *Perkins + Will Research Journal* 01.01, no. (2009), 19.

are synergized to help develop a solution to the design prompt. The only requirement is that each team must defend their solution.⁶⁹

Essentially the Healthcare Think Tank is a rally around a central topic that is broken down and built back up. This gathering of a clear goal coupled with the right people and questions, within a defined time limit, can help avoid the well-known “safe” solutions that professional practice often resorts to. This investigation helps assist clients build 21st century buildings for 21st century people and their challenges. Ideas are quickly developed, challenged, tested and finally discarded or further pursued efficiently.⁷⁰

Success is further attributed to working outside your comfort zone, the participants not wanting to look bad, competition between groups, team building, the identification of valuable skills throughout leaders and the inspirational diversity of solutions.⁷¹ Results and findings are shared through future white papers, design exercises, and firm wide webinars and other venues that equip the firm to become leaders in the healthcare design practice.⁷²

“Each year the tools and results from these meetings are shared throughout many venues and influence our work, equipping us to be leaders in the healthcare design practice”

P E R K I N S
+ W I L L

⁶⁹ Kuttaiah, Bynum, Guenther, "Healthcare Think Tank : A Collaborative Approach to Innovation." *Perkins + Will Research Journal* 01.01, no. (2009), 19.

⁷⁰ Kuttaiah, Bynum, Guenther, "Healthcare Think Tank : A Collaborative Approach to Innovation." *Perkins + Will Research Journal* 01.01, no. (2009), 15.

⁷¹ Kuttaiah, Bynum, Guenther, "Healthcare Think Tank : A Collaborative Approach to Innovation." *Perkins + Will Research Journal* 01.01, no. (2009), 15.

⁷² Kuttaiah, Bynum, Guenther, "Healthcare Think Tank : A Collaborative Approach to Innovation." *Perkins + Will Research Journal* 01.01, no. (2009), 21.

11.4 Rocky Mountain Institute

With a holistic vision of “a world thriving, verdant, and secure, for all, forever”, RMI considers itself “institutional acupuncture,” having the ability to insert itself to get business logic flowing properly.⁷³ Their mission is “to drive the efficient and restorative use of resources.” RMI works primarily with the private sector to investigate and research ways in which they can scaffold natural capitalism to make use of all its inherent abilities.⁷⁴

“Think and Do Tank”

-Rocky Mountain Institute



⁷³ Rocky Mountain Institute, "Core Practices." 2011.<http://www.rmi.org/rmi/Core+Practices> (accessed May 3, 2011).

⁷⁴ Rocky Mountain Institute, "Core Practices." 2011.<http://www.rmi.org/rmi/Core+Practices> (accessed May 3, 2011).

12.0 LOOKING TO THE TOP

For argument purposes, profession and academia represent two sides of the coin; the design of the built environment. I have chosen to evaluate the top five admired graduate architecture schools identified by the 2011 Design Intelligence “Survey of Architecture Dean’s and Department Heads.” in order to identify the best practices and visions for each institution. By identifying what they have done or are currently doing that has pushed them to greatness can help influence the development of a future professional and academic partnership. An evaluation of the Dean’s mission statements can further help reveal what is preparing the future professionals of tomorrow.

Top 5 (M.Arch) Graduate

Architecture Schools:

- 1. Harvard University**
- 2. Yale University**
- 3. Massachusetts Institute of Technology**
- 4. Columbia University**
- 5. University of Michigan**

12.1 #5 University of Michigan

The Taubman College of Architecture and Urban Planning at the University of Michigan prepare graduates for positions of responsibility from local to global scales. They take part in innovative design and policy research through outreach and partnerships.⁷⁵ Taubman College believes that a broadly diverse student body enriches the learning environment.⁷⁶

“Technological changes paired with economic forces are significantly altering the construction of buildings and the practice of architecture. Conventional techniques will no longer suffice if architecture is to remain a viable venture.”

- Dean, Monica Ponce de Leon

Dean Ponce de Leon believes that architecture needs to be part of the discussion, when speaking about some of the most critical issues in the national agenda.⁷⁷

“Academia provides a lens independent of the demands of the professions and has the potential to advance the fields in extraordinary ways.”

- Dean, Monica Ponce de Leon

⁷⁵ University of Michigan : Taubman College, "The College."
http://www.tcaup.umich.edu/about/the_college/. (accessed October 26, 2011).

⁷⁶ University of Michigan : Taubman College, "The College."
<http://www.tcaup.umich.edu/about/diversity/>. (accessed October 26, 2011).

⁷⁷ University of Michigan : Taubman College, "The College."
http://www.tcaup.umich.edu/about/deans_message/. (accessed October 26, 2011).

Taubman College is becoming multi-disciplinary in thought because of the notion that environmental issues cut across many fields and this is the only way to address the increasingly complex challenges that we face. They are actively revising course content, integrating expertise, and revisiting the relationship of design instruction to synthesize course content to maximize impact.⁷⁸



⁷⁸ University of Michigan : Taubman College, "The College."
http://www.tcaup.umich.edu/about/deans_message/. (accessed October 26, 2011).

12.2 #4 Columbia University

Columbia believes students are called to sensitivity, imagination and intellect when analyzing behavioral, environmental and cultural issues. Dean Wigley sees architecture as an art and a profession.

“Education is all about trust. The best teachers embrace the future by trusting the student, supporting the growth of something that cannot be seen yet, an emergent sensibility that cannot be judged by contemporary standards.”

- Dean Mark Wigley

Thinking must draw on everything that is known in order to jump into the unknown. The Dean Wigley states, “You must trust the formulations of the next generation that by definition defy the logic of the present. Education becomes a form of optimism that gives our field a future by trusting the students to see, think, and do things we cannot.”⁷⁹



⁷⁹ Wigley, Mark. "Dean's Statement: The Future of the Architect." 2010.<http://www.arch.columbia.edu/school/deans-statement-future-architect> (accessed December 8, 2010).

12.3 #3 Massachusetts Institute of Technology

Although M.I.T. often exchanges ideas with different disciplines and pursue interdisciplinary collaboration, they have a belief that ideas are generated from bottom-up and from within. The Dean at M.I.T., Adele Naude Santos, has a conviction that the Profession gives the knowledge produced at school to the society and thus prepares students to solve future problems, not current ones. This is driving the school to develop a new curriculum.⁸⁰



⁸⁰ MIT Architecture. "Architectural Design." <http://architecture.mit.edu/architectural-design.html> (accessed December 8, 2010).

12.4 #2 Yale University

Yale's Dean, Robert Stern, states that they are committed to a broad and deep generalism. He is not interested in the hyper-specialization trend of information technology and states that he is, "wary of trends masquerading as ideas."⁸¹

"Architecture is not a kind of electronics."

– Robert Stern

The school collaborates with the community through their First Year Building Project; an affordable house. They also integrate sustainability in their ongoing collaboration in design and research with the School of Forestry and Environmental Studies. Projects are based around global cities urban design issues as they search for real world solutions. A major and interesting strength at the Yale School of Architecture is the stance that there is no singular answer to architecture and they refuse to give a definitive answer to what architecture is or might become. They are interested in the question rather than finding a definitive answer.

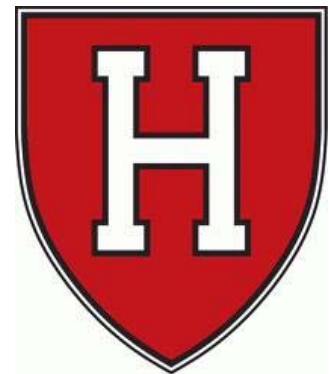
"Many architecture schools function as academies, fostering a certain "true" way, insistent about one mode of aesthetic expression and one way of doing architecture, straight-jacketing students in isms and ideologies. But today's "ism" has a way of becoming tomorrow's "wasm"." – Robert Stern



⁸¹ Yale University. "Mission Statements of the Schools of Yale University." <http://www.yale.edu/about/yale-school-mission-statements.pdf> (accessed December 8, 2010).

12.5 #1 Harvard University

The GSD in Cambridge, Massachusetts, stays ahead of the curve by continually rethinking the conventions of the design practice. The school believes in trans-disciplinary research, working in collaboration with other schools at Harvard and beyond the school itself.⁸² They are working in the ethical and political realm, developing the social aspects of alternative and sustainable futures. Dean Mohsen Mostafavi believes that in order to plan a better future, we must generate a new organizational structure and develop new patterns and platforms to collaborate. He continues on to state that “we must recalibrate the relationship between knowledge and innovation.” The infrastructure at the GSD is based on imagination.⁸³



⁸² Cohen, Preston S.. "Welcome to the Department of Architecture."
<http://www.gsd.harvard.edu/academic/arch/> (accessed December 8, 2010).

⁸³ Cohen, Preston S.. "Welcome to the Department of Architecture."
<http://www.gsd.harvard.edu/academic/arch/> (accessed December 8, 2010).

13.0 FUTURE ORIENTED SOLUTION

An ARCHITECT in the future will be immersed in a global world with global problems and global opportunities of global proportion. How does academia prepare the next generation of students and professionals to become global leaders within the built environment managing global challenges?

“Global Citizen (N.)

*An individual who values all people’s
dignity beyond the barriers of nationality;
an individual who recognizes a
responsibility to act with awareness that the
world is a global community.”*

-Citizens for Global Solutions

13.1 PROJECT CANVAS

Beginning in Fall, 2012, ten talented, committed and adventurous students from around the world will come together and join the highly anticipated NAAB (USA/China) Accredited Doctor of Architecture, Global Track : China focus within the School of Architecture at the University of Hawaii at Manoa. The 3-year track presents international and global opportunities unequaled by any other professional program in architecture. Foremost among these, though mutual agreement, is the option to earn a NBAA (China) Accredited Master of Architecture from the College of Architecture and Urban Planning at Tongji University in Shanghai within the 90 credit, 3-year, Doctor of Architecture (Global Track : China Focus) from the University of Hawaii at Manoa.

13.2 NAAB STUDENT PERFORMANCE CRITERIA

First you must understand the laundry list of Student Performance Criteria established by NAAB (Appendix II) required for a Doctorate of Architecture Global Track degree and establish what criteria would be more effective and receptive across organizational boundaries if they were utilized in the same framework.

- Communication Skills
- Design Thinking Skills
- Visual Communication Skills
- Technical Documentation
- Investigative Skills
- Fundamental Design Skills
- Use of Precedents
- Ordering Systems Skills
- Historical Traditions & Global Culture
- Cultural Diversity
- Applied Research

- Pre-Design
- Accessibility
- Sustainability
- Site Design
- Life Safety
- Comprehensive Design
- Financial Considerations
- Environmental Systems
- Structural Systems
- Building Envelope Systems
- Building Service Systems
- Building Materials and Assemblies

- Collaboration
- Human Behavior
- Client Role in Architecture
- Project Management
- Practice Management
- Leadership
- Legal Responsibilities
- Ethics and Professional Judgment
- Community and Social Responsibility

13.3 COLLECTIVE CRITERIA

I identified that Communication Skills, Investigative Skills, Use of Precedents, Applied Research, Collaboration, Leadership, as well as Community & Social Responsibility are NAAB Student Performance Criteria that need to be “collective” in order to be effective; making research-design efforts *situated to guide* the profession and academia making future focused decisions for our global community.

The 2011 Doctorate of Architecture Student Performance Criteria Matrix for the University of Hawaii at Manoa currently does not have a course that integrates (SPC A.11) applied research with (SPC C.1) collaboration. Amongst these criteria it is important for students to gain (SPC C.6) leadership opportunities and apply (SPC A.1) communication skills to become influential and relay information to the profession. In order to gain pertinent information, researchers must have (SPC A.5) investigative skills. During investigation, students and professionals will utilize past and current precedents (SPC A.7).

The criteria established by NAAB are valuable but do not maximize their potential to be more effective when they are not linked. In order for collective communication and results there needs to be collective criteria for this to occur.

Below are performance criteria identified that are needed to be “collective” in order to be effective; making research-design efforts *situated to influence* the profession and academia making a positive impact on our global community.

- A.1 Communication Skills
 - *Ability* to read, write, speak and listen effectively.
- A.5 Investigative Skills
 - *Ability* to gather, access, record, apply and comparatively evaluate relevant information within architectural coursework and design processes.
- A.7 Use of Precedents
 - *Ability* to examine and comprehend the fundamental principles present in relevant precedents and to make choices regarding the incorporation of such principles into architecture and urban design projects.
- A.11 Applied Research
 - *Understanding* the role of applied research in determining function, form, and systems and their impact on human conditions and behavior.
- C.1 Collaboration
 - *Ability* to work in collaboration with others and in multi-disciplinary teams to successfully complete design projects.
- C.6 Leadership
 - *Understanding* of the techniques and skills architects use to work collaboratively in the building design and construction process and on environmental, social and aesthetic issues in their communities.
- C.9 Community and Social Responsibility
 - *Understanding* of the architect’s responsibility to work in the public interest, to respect historic resources, and to improve the quality of life for local and global neighbors.

14.0 IMPLEMENT GLOBAL PAC PROGRAM

The Global PAC is a third-party think-tank that synergizes mentorship and research to develop innovative solutions for global issues.



phase **1** u s a : c h i n a s t u d i o

“You cannot command collaboration and creativity. You have to inspire it and create a context, an environment and a culture where it can happen – and where people who feel united by a shared vision will then work collectively and collaboratively to make it happen.”

– Dov Seidman of LRN

The criteria are utilized for the framework of the GLOBAL Professional + Academic Collaborative. In order to create an innovative collective we must:

Collaborate WHO can make things happen?

Investigate WHY are things done and where are we heading?

Communicate WHAT can be done better?

Apply WHERE is research applicable?

Lead WHEN is it necessary? The time is now!

14.1 WHO

- 2 Academic Institutions
 - University of Hawaii at Manoa, USA
 - Broad connections to top architectural practices around the world
 - Tongji University, China
 - Respected and prestigious architecture institution in China
- 10 Advanced Design Grad Students from Hawaii program
- 10 Advanced Design Grad Students from Tongji program
- 2 Leading Research Professors
- 1 Design Practice or Community Group
- 4 Visiting Professionals

- Horizontal Connections
 - Interdisciplinary Connections within UH
 - City and Regional Planning
 - Engineering
 - Political Science

- Vertical Connections
 - Government
 - Hawaii Housing Authority
 - Private Sector
 - Kamehameha Schools
 - Global Organizations
 - UNESCO
 - Citizens for Global Solutions

Utilize firms from UH School of Architecture network or establish new relationships.

• Altoon + Porter Architects	Los Angeles, CA	USA
• Architects Hawaii	Honolulu, HI	USA
• Architectural Resources Group	San Francisco, CA	USA
• Architecture International	Mill Valley, CA	USA
• Arquitectonica	Miami, FL	USA
• Broadway Mylan	Singapore	Malayasia
• Berkus Design Studio	Santa Barbara, CA	USA
• Callison	Seattle, WA	USA
• EHDD	San Francisco, CA	USA
• Ferraro Choi and Associates	Honolulu, HI	USA
• Gansam Partners	Seoul	Korea
• Gensler	San Francisco / Shanghai	USA / China
• Group 70 International	Honolulu, HI	USA
• Hassell	Hong Kong	China
• HKS	Atlanta, GA / Dallas, TX	USA
• J.J. Pan and Partners	Taipei	Taiwan
• KYA Design Group	Honolulu, HI	USA
• Kallman, McKinnell & Wood	Boston, MA	USA
• Kober Hanssen/Mitchell Architects	Honolulu, HI	USA
• Kohn Pendersen Fox Associates	New York, NY	USA
• Mithun	Seattle, WA	USA
• NBBJ	Seattle, WA	USA
• Page Southerland Page	Houston, TX	USA
• Payette Associates	Boston, MA	USA
• PDI World Group	Minneapolis, MN	USA
• Perkins Eastman	New York, NY	USA
• Phillip K. White and Associates	Honolulu, HI	USA
• RAFI Architecture	Henderson, NV	USA
• Ronald Lu & Partners	Hong Kong	China
• RTKL International	Shanghai	China
• Sasaki Associates	Boston, MA	USA
• TVS International	Atlanta, GA	USA
• Urban Works	Honolulu, HI	USA
• Weinstein AIU Architects & Urban Design	Seattle, WA	USA
• Zimmer Gunsul Frasca Architects	Portland, OR	USA

Who Phase 2: Vision for the Global PAC Network

“In order to solve a problem as big as globalization, you need a lever as big as the problem.” - Thomas Friedman

It is important to build connectivity between current Practicum relationships and build new partnerships globally to unite a profession poised to respond to global issues. With globalization; everybody is in our backyard and it is necessary to be influential across borders and integral to connect perspectives throughout the globe.



“Global education is shaped by the larger culture of which the educational institution exists but also needs to be reviewed in the changing nature of the larger world it seeks to understand”- Visions in Global Education, Forward

14.2 WHAT

- **ARCH 550** : Global Architecture Studio is an opportunity to implement the
- **GLOBAL PAC**
 - 3rd Year Graduate Level
 - Maintain connectivity to Practicum firms
 - Students will have taken Practicum in the summers before their 2nd and 3rd year in the USA and China
 - Continually foster relationships and trust
 - Motivate continual communication between practice and the students so Practicum is not a “one-n-done” experience and increase synergy between the two
 - Projects will be future oriented and focused around global concerns;
 - Climate Change > Disaster Relief Housing > Partner with Perkins+Will*
 - Sustainable Development > Urban Planning > Partner with Sasaki Associates*
 - Population & Resources > Affordable Housing
 - All of which will have a focus on modularity and a closed system from the materials and resources extraction to end-use.
 - Students will start with the large scale issues at a global level and being to focus in on local solutions. With vast connections and participation in the PAC, these local connections become wide-spread and are thus global solutions.

14.3 WHERE

- Spread throughout our local communities globally
 - Temporarily at the School of Architecture for 2012
 - Room 220
 - Secure a space downtown by Fall 2012
 - Davies Pacific Center 1st Floor
 - 841 Bishop Street
 - Honolulu, HI 96813
 - 660 Ala Moana Blvd

14.4 WHEN

- 3rd Year of Graduate Global Track Program
- Beginning in the Fall of 2014

University of Hawaii at Mānoa School of Architecture

Fall 2012

D. ARCH. PROGRAM CHART: GLOBAL TRACK CHINA FOCUS

Student Name _____

Undergraduate Degree Pre-Architecture Degree Required

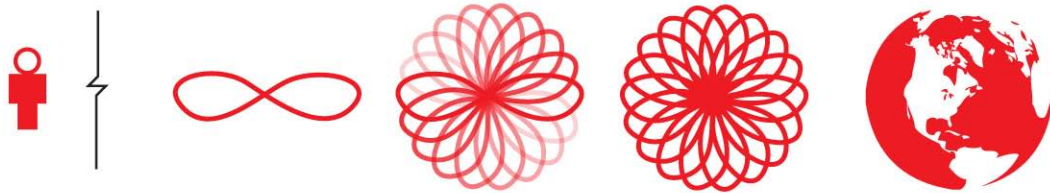
1	F	ARCH 541 [6] Architecture Studio II <small>2010294 [2](transfer)</small>	ARCH 533 [3] Adv Design Communication II <small>2010291[1](transfer)</small>	ARCH 523 [3] Architecture Systems II Wood & Steel		ARCH 516 [3] Advanced Design Theory <small>2010149[2](transfer)</small>			15
	S	ARCH 542 [6] Architecture Studio III <small>2010295 [2](transfer)</small>	ARCH 539 [3] Research Methods Seminar <small>2010293[1](transfer)</small>	ARCH 524 [3] Architecture Systems III: Conc. & Masonry	ARCH 525 [3] Architecture Systems IV: Sustainability <small>2010110[2](transfer)</small>				15
Sum		ARCH 547 T [6] Professional Studio: China <small>[3 months professional practice] Optional Tongji Students</small>	Maximum transferable credits 30 credits						6
2	F	ARCH 544 [6] Architecture Studio V: Comprehensive <small>2101XXX[2]</small>	ARCH 546C [3] Doctorate Project I: China		ARCH 526 [3] Architecture Systems V: Integration <small>2010XXX[2]</small>			2070100[3] Chinese Language	12 + 3 Tongji
	S	ARCH 543 [6] Architecture Studio IV: Urban Design <small>2010XXX[2]</small>	ARCH 546G [3] Doctorate Project I: Global <small>2010XXX[2]</small>			ARCH 515 [3] Asia-Pacific Arch History <small>2010XXX[2]</small>		2900006[3] Chinese Situations	12+ 3 Tongji
Sum		ARCH 547 G [6] Professional Studio: Global <small>Optional UH students</small>	ARCH 547G OR ARCH 547B		ARCH 547 B [6] Professional Studio: Business <small>Optional UH students</small>				6
3	F	ARCH 550 C [6] Architecture Studio: China	ARCH 548 C [3] Doctorate Project II: China			ARCH 545 [3] Advanced Practice		ARCH ELECT [3] OR ARCH 551 [1] ARCH 551 [1] ARCH 551 [1]	15
	S	ARCH 550 G [6] Architecture Studio: Global	ARCH 548 G [3] Doctorate Project II: Global			ARCH 555 [3] Advanced Global Practice		ARCH ELECT [3] OR ARCH 551 [1] ARCH 551 [1] ARCH 551 [1]	15
									90

All non-native English language speakers must be tested by ELI department of UHM before year 2 and take any required coursework in Year 2

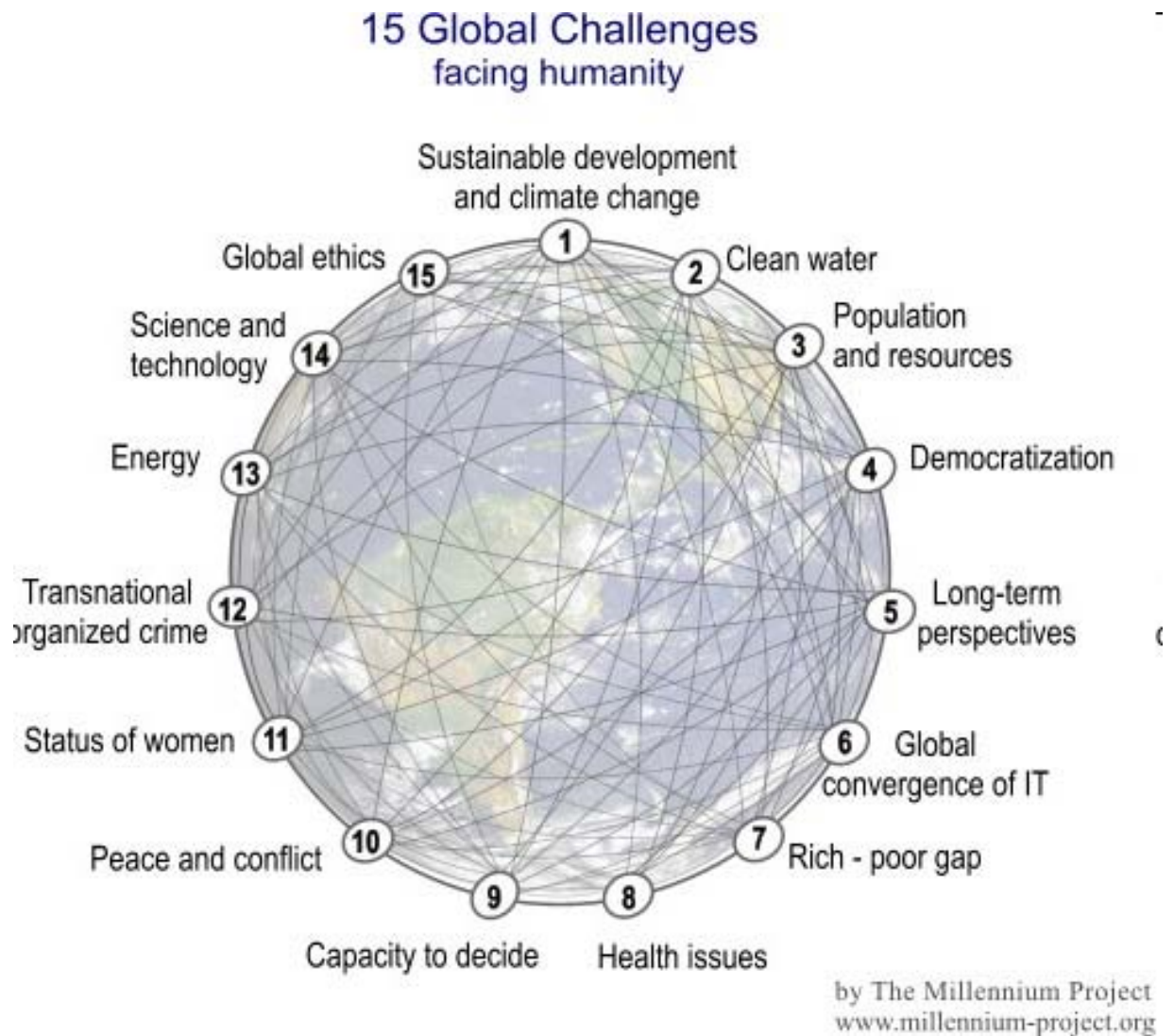
14.5 WHY

As society globalizes there are many facets that are indirectly and directly affected. These issues need to be given attention in a timely manner so the resolutions can be implemented effectively. There must be continual scanning of the future horizon and futures assessments to make today's decision making relevant.

The focus of academic institutions is the attainment of new knowledge and thus should be the foundation and holder of human knowledge. The academic institution should then disseminate its knowledge throughout the campus to draw upon multi-disciplinary perspectives, flushing ideas across different intellectual minds driving dynamic and thoughtful solutions.



“Gaining global perspectives creates a better world vision”



Community & Social Responsibility

A global community is everyone.
We are all connected; directly and indirectly.

Our responsibility as an architect in the future
Is to realize that *it is not about you*,
but all those around you.

If you are planting for a year, plant grain.
If you are planting for a decade, plant trees.
If you are planting for a century, plant people.

14.6 HOW

Week 1-3: Students will be presented a global issue by an outside member; professional, topical expert or community group at the beginning of the semester to gain traction.

(This presentation should be promoted and open to the university and public) They will investigate how to capitalize on this challenge and turn it into an opportunity. They will gather precedents which they deem appropriate and share them with their peers.

Week 4: A week long **charette** will take place to get the ideas on paper.

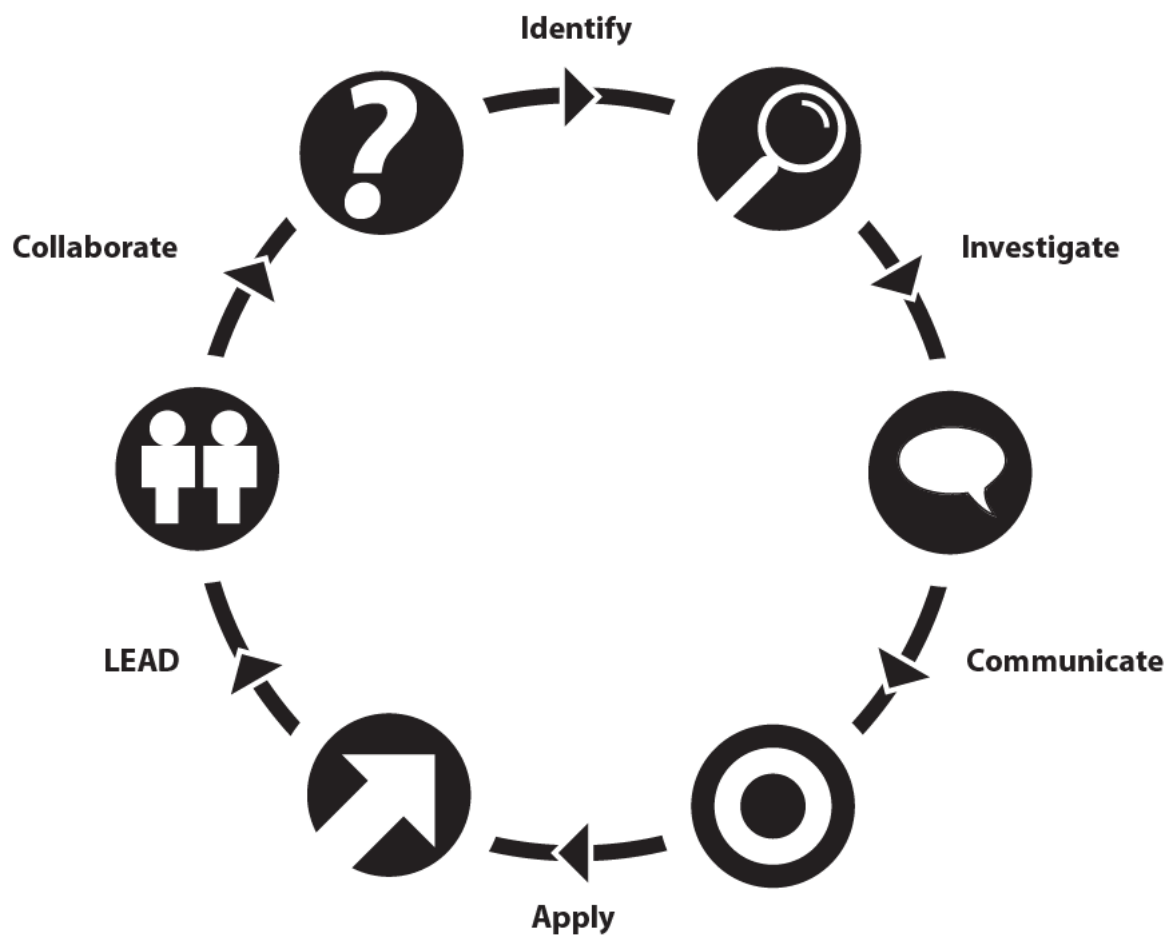
Week 5: The PAC location will then host a **conference** in which the students will present their early findings and schematics to outside community members, experts, professionals and relevant university disciplines to **raise awareness**.

- There will then be a **small-group break out** session. Each of the five small groups will have two students from Tongji, two students from Hawaii and an outside member. The group will **exchange ideas** and proceed to take part in a group charette. Groups will then **converge** to share their developments.

Week 6-15: Students will begin the design development phase of the project as they have exchanged valuable perspectives with the client. They will have the opportunity to **utilize their strengths** to work out what was discussed through various design communications; building models, prototypes or multi-media.

Week 16: The findings will be shared at the PAC Summit (temporarily the end of the semester meeting but will evolve into a National meeting of PAC Members (schools, professional practices, expert researchers)). Once there is National involvement and membership and will be distributed through a PAC Publication and networking sites.

15.0 UTILIZE INNOVATION PROCESS



15.1 COLLABORATE



If we want to think outside of the box, we must get outside of the box. Effective fertilization and application of knowledge would be possible without the cross-pollination between the profession and academia working around an issue collectively. It is necessary to get the right people around the table to add their perspectives to make informed design decisions. People are the cause, effect and solution and thus people should be the focus. It is necessary to understand each person's strengths. We each have a role in the larger picture. It is this concept for the acronym that "Together Everyone Achieves More."

"If you cannot communicate, you cannot collaborate. If you cannot collaborate, you will be less creative."

*- Tony Wagner, Author of the Global
Achievement Gap and
Learning to Innovate,
Innovating to Learn*

15.2 IDENTIFY



Some phenomena lie under the radar while others are under a spotlight and are more obvious. It is important to imagine, anticipate and notice these issues early on to assess how they might grow and whether their growth should be encouraged, discouraged or ignored. The course will continually identify areas that are crying out for more solid information which professionals have little time to research.

“If you are asking the wrong questions, the answers don’t matter, and increasingly we are asking the wrong questions.”

- Robert Bennett, Former Senator of Utah

15.3 INVESTIGATE



It is important to investigate what has been done and what can be made better. Looking at issues on various scales (from global to direct impact) will help consider all facets of a challenge providing the best evidence. It is only after all evidence and research has been executed that effective communication of the findings can take place and being to inform decision making.

“Analytics will be the real differentiator as technology will be a norm. The only advantage will be the “human stuff.”

- Joel Cawley, Vice President for Strategy at IBM

15.4 COMMUNICATE



Knowledge must be effectively portrayed. Students need to consistently communicate with the profession as they assume an “active client relationship” becoming the user of the product (the research and efforts of academia).

Students must effectively communicate knowledge on relevant level that is able to be processed, refined, reciprocated and further developed in order to be applicable and this communication needs to be a space where students and professionals alike can have mutual respect, feeling comfortable to share their thoughts and opinions.

“The single biggest problem with communication is the illusion that it has taken place.”

– George Bernard Shaw

15.5 APPLY



Professional practice needs to be able to identify and apply solutions in a rational manner based on the best available evidence. This makes design more relevant to solve future challenges. Currently academia has few outlets to apply their efforts to create real change for today. Too often, knowledge is carried on with the student but the tangible efforts are tossed into the trash on the way out of the classroom. This is a problem that can no longer exist. Design solutions in academia must be honed and applicable to be put to practice.

15.6 LEAD



By collaborating across institutional barriers we are able to identify and utilize our strengths to create effective leaders and elevate one another to a higher level. Leadership needs to be cultivated to challenge the status-quo and become critical of how we operate and what can be improved. This defines how inventors and innovators are born and what America needs to do in order to stay ahead of the rising global competitive curve.

A leader in a global economy requires agility, commitment, organization and collaboration of ideas, but most of all, makes a full circle back to building relationships between people.

“The real voyage of discovery consists not in seeking new landscapes but in having new eyes.” - Marcel Proust

Challenging the status quo is the most critical part of company development because if you don’t someone else will. The ability to innovate is important but the necessity to constantly improve and adapt is integral because competition will always be close behind.

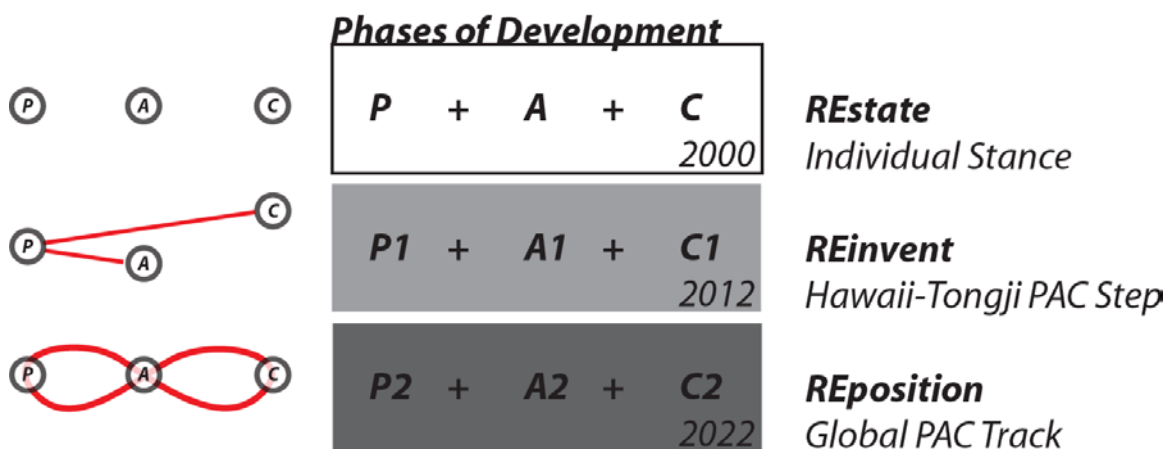
15.7 BASED AROUND TIME



There is no time to waste. As Thomas Friedman states, “This is our job. This is our mess. It cannot wait. We made it. We need to fix it in our time, at our expense – but with an eye on the future, not just the present.”

“It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change.”

- Evolutionary Theory



16.0 CONCLUSION

The Global PAC objective is to design curriculum to utilize the strengths of academia and profession to impact results in the built environment. The profession and academia are mutually responsible for innovation. There must be the ability to cross-pollinate strengths and ideas, and gain the involvement from decision makers that implement change in the built environment. Innovation is integral in a global marketplace that is full of challenges and competition. There must be a platform that can provide agility, mutual respect and innovative thought for future global challenges.

Implementing applied research and collaboration between the profession and academia within the University of Hawaii at Manoa community and existing connections is a step in the right direction, but cannot make a broader impact alone. This is why it is integral to connect perspectives throughout the globe. *(By having a “coalition of the willing” (UH Soa and Tongji), we can then begin to develop and improve upon the International framework that is relevant to our constantly changing world.)* By channeling the vision of the University of Hawaii School of Architecture (Appendix B), all faculty and students can be on the same page and work together towards a global model. International education is the study of a collection of nations, while global education focuses on problems and issues that cut across national boundaries.⁸⁴

By understanding other perspectives and creating a culture of competition, we can drive the quality of results upward. The cause and effects of globalization are a global

⁸⁴ Tye, Kenneth A. Visions in Global Education. A History of the Global Education Movement in the United States. 29, The Globalization of Curriculum and Pedagogy in Teacher Education and Schools. Toni Fuss Kirkwood-Tucker. New York: Peter Lang, 2009, 7.

problem and require a global solution. Information technology provides the opportunity to make connections and exchange knowledge.

Our lives are becoming filled with information and technology that make things smaller and faster, but we somehow seem to have bigger problems and less time. Our society has become a culture of multi-tasking. It is unfortunate that our lifestyle and economic state have made us shortsighted when our environmental state requires a long view.

“Good planning always costs less than good reacting.” -Wayne Schmidt

We need to do more with what we have to reposition the building profession and academia. Challenges are here, near and far. The question becomes, “What are we going to do about it?” We can no longer stay in our institutional bubble and expect to influence our environment. There is a belief that interdisciplinary teamwork will produce greater results within a work setting.⁸⁵ Although true, it is inefficient. The issue facing us is that interdisciplinary work within an organization is affected by the same overarching obstructions. We can avoid institutional roadblocks by rethinking who can be involved to get us all where we need to be; making a greater impact beyond ourselves. There is a belief that work is all about efficiency but too often we forget about being effective. The profession has metrics and spreadsheets that quantify productivity.⁸⁶ The profession has lost sight of its responsibility to design for the welfare of society and to cultivate the next

⁸⁵ Coutu, Diane. "Why Teams Don't Work." *The Harvard Business Review Interview*, May, 2009, 98-105.

⁸⁶ Scott, Anthony. "Innovation Center – Strategy Video Transcript." 2008.http://ww3.harvardbusiness.org/corporate/demos/innovation/video/videoTranscripts/Transcript_Any.html (accessed May 3, 2011).

generation of designers. Horse-blinders have been placed on practitioners, making them focus on the bottom line; the pocketbook of the firm and client. A new bottom line needs to be established. The bottom line is humanity.

*“Great parenting is not about the parent;
Great teaching is not about the teacher;
And great leadership? Whatever it truly is,
It’s not about you.”*

–Bob Burg & John David Mann

For instance, the profession is defined as a learned occupation and has the underlying connotation of making money. It is understood that a professional must *produce* (raising the bottom line) in order to make money. Academia on the other hand is defined as a school for specialized instruction and has the connotation of learning. Education is about experimentation, investigation, mistakes and lessons, with little to no sight of financial impact. The profession and academia have two very different approaches. Successful innovation and global communities demand both mindsets! When our goal is innovation, we must invest in each other. If we all give a little, we can gain a great deal.⁸⁷

We are in an era when the design industry needs to be poised to respond to the resource, climatic and social issues facing us. We must all take a part in these issues.

⁸⁷ Scott, Anthony. "Innovation Center – Strategy Video Transcript." 2008.http://ww3.harvardbusiness.org/corporate/demos/innovation/video/videoTranscripts/Transcript_Anonymous.html (accessed May 3, 2011).

Innovative ideas must be incubated; this takes time, money and the right people.⁸⁸ The future cannot be seen with our nose to the professional grindstone. The design profession must access the renewable resources of academic research in order to fertilize innovation for the future. The isolation of thoughts and work within the profession and academia has not permitted the communication needed for innovation. The profession and academia must have a vision *to rewrite the future* and a foundation in which to put innovative ideas into practice. I do not propose more collaboration within organizations, but rather suggest that interdisciplinary collaboration across different institutions (the profession and academia) can help achieve real innovation that is not possible when attempted alone.

The PAC provides a neutral nucleus where interdisciplinary ideas between the profession and academia can intersect, projecting innovation into the physical world to be seen, heard and felt. The collaborative capital within this neutral space is meant to align actions and focus energy toward a goal. This will provide greater efficiency and augment the cross pollination of valuable thought resources which will in turn initiate, invigorate and incubate innovation. Innovation is typically the product of different efforts or discoveries that, when seen in a new light, can spark a new direction.

We must change the game. **We must form a PAC.**

⁸⁸ Scott, Anthony. "Innovation Center – Strategy Video Transcript." 2008.http://ww3.harvardbusiness.org/corporate/demos/innovation/video/videoTranscripts/Transcript_Any.html (accessed May 3, 2011).



17.0 2030 RESULTS

The University of Hawaii - School of Architecture is now part of a larger global collaborative network. Academic practice is incorporated into professional practice; fertilizing design decisions with evidence and future forethought. Connections across the professional and academic gap have provided work opportunities for students to continue pursuing their passion to provide qualitative evidence based design. The program has become a focal point for firms looking to hire students with strong investigative, communication and leadership skills. These students can help take their practice to new heights by attracting smart clients who value evidence based research.

PAC Alumni are making positive changes beyond the profession and academia to help shift power in a more positive direction. Government legislation, the National Architecture Accreditation Board and design schools around the world have connections with active alumni. The PAC is continually growing as a passionate and activist culture.

This PAC model has been embraced by prestigious universities to emphasize their humanitarian concerns, being a change catalyst beyond their institutional walls.

The branding and marketing has magnetized the rising altruistic generation. Various disciplines across campuses have rallied behind collaborative partnerships with private-partnerships. Students and professionals are now working as one to develop cutting edge technology, design decisions and products that provide a greater quality of life for the global community. “Quality and thoughtful consideration” is synonymous with various professional practices who are actively involved with the PAC. Business is growing. Both the financial and humanitarian bottom line is rising. Professionals and students alike are mutually “getting the job” and keeping the job, by investing in mentorship, research, and innovation.

These are the keys to the bottom line.

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[studio/Default.aspx?path=Gallery%2fPurpose%2fObjective%2f](http://www.cadc.auburn.edu/rural-studio/Default.aspx?path=Gallery%2fPurpose%2fObjective%2f) (accessed May 3, 2011).

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Appendix

I) Center for Architecture Science and Ecology – Sponsored Research Funding

II) National Architecture Accreditation Board – Student Performance Criteria

Appendix: I



SPONSORED RESERCH

Title:
Intelligent Facades for High Performance Green Buildings

Principle Investigator:
Anna Dyson



Dates:
10/1/2009 - 9/30/2012

Funding to Date:
\$713,600

Title:
Rensselaer Dynamic Shading Window System with Integrated Concentrator PV Modules

Principle Investigator:
Anna Dyson



Dates:
6/1/2006 – 12/31/2009

Funding to Date:
\$742,500

Title:
Dynamic Window Shading System (DSWS) with Integrated Concentrator (IC) Solar Modules

Principle Investigator:
Anna Dyson



Dates:
3/21/2002 – 3/31/2008

Funding to Date:
\$417,131

Title:

PATH: Thin-Film Active Building Envelopes

Principal Investigator:

Steven VanDessel

Sponsor:



Dates:

9/1/2005 – 8/31/2009

Matching fund:

\$300,000

Title:

Active Building Envelope for Energy Self-Sufficiency, Design, Optimization and experimental Validation

Principle Investigator:

Steven VanDessel

Sponsor:



Dates:

9/15/2003 – 2/28/2009

Funding to Date:

\$280,000

Title:

Center for Architecture Science and Ecology

Principle Investigator:

Anna Dyson

Sponsor:



Dates:

2008 -

Matching Fund:

\$43,000 annually

Title:

Product Development Integrated Concentrator Model

Principle Investigator:

Anna Dyson

Sponsor:

NYSERDA

Dates:

5/7/2004 – 1/31/2008

Funding to Date:

\$38,000

Title:

High Performance Masonry System II

Principle Investigator:

Jason Vollen

Sponsor:

**THE AMERICAN INSTITUTE
OF ARCHITECTS****2009 AIA Upjohn Award**

Dates:

2009

Funding to Date:

\$27,000

Title:

NVMG Dynamic Windows

Principle Investigator:

Anna Dyson

Sponsor:

New Visual Media Group, LLC

Dates:

3/1/2008 – 2/28/2011

Funding to Date:

\$20,000

Title:
Emerging Material Technologies in Ceramics
 Principle Investigator:
Jason Vollen

Sponsor:

BSA

2008 Boston Society of Architects Research Grant

Dates:
2008

Funding to Date:
\$11,915

Title:
Next Generation Integrated Energy Systems
 Principal Investigator:
Anna Dyson

Sponsor:

NYSERDA

Dates:
10/02/2008 – 3/31/2010

NYSERDA -
\$600,000

Title:
**Advanced Sensors and Controls for Building and Industrial Applications:
 Electropolymeric Dynamic Daylighting System (EDDS)**
 Co-Principal Investigators:
Carl Galioto, Anna Dyson, Mark Mistur

Sponsor:

NYSERDA

Dates:
3/21/2008 – 3/31/2012

NYSERDA PON 1164 -
\$300,000

Appendix: II

STUDENT PERFORMANCE CRITERIA (2009)

2009 Conditions for Accreditation
National Architectural Accrediting Board, Inc.

PART TWO (II): SECTION 1 – STUDENT PERFORMANCE -- EDUCATIONAL REALMS & STUDENT PERFORMANCE CRITERIA

The accredited degree program must demonstrate that each graduate possesses the knowledge and skills defined by the criteria set out below. The knowledge and skills are the minimum for meeting the demands of an internship leading to registration for practice.

The school must provide evidence that its graduates have satisfied each criterion through required coursework. If credits are granted for courses taken at other institutions or online, evidence must be provided that the courses are comparable to those offered in the accredited degree program.

The criteria encompass two levels of accomplishment¹⁰:

- **Understanding**—The capacity to classify, compare, summarize, explain and/or interpret information.
- **Ability**—Proficiency in using specific information to accomplish a task, correctly selecting the appropriate information, and accurately applying it to the solution of a specific problem, while also distinguishing the effects of its implementation.

The NAAB establishes performance criteria to help accredited degree programs prepare students for the profession while encouraging educational practices suited to the individual degree program. In addition to assessing whether student performance meets the professional criteria, the visiting team will assess performance in relation to the school's stated curricular goals and content. While the NAAB stipulates the student performance criteria that must be met, it specifies neither the educational format nor the form of student work that may serve as evidence of having met these criteria. Programs are encouraged to develop unique learning and teaching strategies, methods, and materials to satisfy these criteria. The NAAB encourages innovative methods for satisfying the criteria, provided the school has a formal evaluation process for assessing student achievement of these criteria and documenting the results.

For the purpose of accreditation, graduating students must demonstrate understanding or ability as defined below in the Student Performance Criteria (SPC):

II.1.1 Student Performance Criteria: The SPC are organized into realms to more easily understand the relationships between individual criteria.

Realm A: Critical Thinking and Representation:

Architects must have the ability to build abstract relationships and understand the impact of ideas based on research and analysis of multiple theoretical, social, political, economic, cultural and environmental contexts. This ability includes facility with the wider range of media used to think about architecture including writing, investigative skills, speaking, drawing and model making. Students' learning aspirations include:

- Being broadly educated.
- Valuing lifelong inquisitiveness.

¹⁰ See also *Taxonomy for Learning, Teaching and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. L.W. Anderson & D.R. Krathwold, Eds. (New York: Longman 2001).

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- Communicating graphically in a range of media.
 - Recognizing the assessment of evidence.
 - Comprehending people, place, and context.
 - Recognizing the disparate needs of client, community, and society.
- A.1. Communication Skills: *Ability to read, write, speak and listen effectively.*
 - A. 2. Design Thinking Skills: *Ability to raise clear and precise questions, use abstract ideas to interpret information, consider diverse points of view, reach well-reasoned conclusions, and test alternative outcomes against relevant criteria and standards.*
 - A. 3. Visual Communication Skills: *Ability to use appropriate representational media, such as traditional graphic and digital technology skills, to convey essential formal elements at each stage of the programming and design process.*
 - A.4. Technical Documentation: *Ability to make technically clear drawings, write outline specifications, and prepare models illustrating and identifying the assembly of materials, systems, and components appropriate for a building design.*
 - A.5. Investigative Skills: *Ability to gather, assess, record, apply, and comparatively evaluate relevant information within architectural coursework and design processes.*
 - A. 6. Fundamental Design Skills: *Ability to effectively use basic architectural and environmental principles in design.*
 - A. 7. Use of Precedents: *Ability to examine and comprehend the fundamental principles present in relevant precedents and to make choices regarding the incorporation of such principles into architecture and urban design projects.*
 - A. 8. Ordering Systems Skills: *Understanding of the fundamentals of both natural and formal ordering systems and the capacity of each to inform two- and three-dimensional design.*
 - A. 9. Historical Traditions and Global Culture: *Understanding of parallel and divergent canons and traditions of architecture, landscape and urban design including examples of indigenous, vernacular, local, regional, national settings from the Eastern, Western, Northern, and Southern hemispheres in terms of their climatic, ecological, technological, socioeconomic, public health, and cultural factors.*
 - A. 10. Cultural Diversity: *Understanding of the diverse needs, values, behavioral norms, physical abilities, and social and spatial patterns that characterize different cultures and individuals and the implication of this diversity on the societal roles and responsibilities of architects.*
 - A.11. Applied Research: *Understanding the role of applied research in determining function, form, and systems and their impact on human conditions and behavior.*

Realm B: Integrated Building Practices, Technical Skills and Knowledge: Architects are called upon to comprehend the technical aspects of design, systems and materials, and be able to apply that comprehension to their services. Additionally they must appreciate their role in the implementation of design decisions, and the impact of such decisions on the environment. Students learning aspirations include:

- Creating building designs with well-integrated systems.
- Comprehending constructability.
- Incorporating life safety systems.
- Integrating accessibility.
- Applying principles of sustainable design.

- B. 1. Pre-Design: *Ability* to prepare a comprehensive program for an architectural project, such as preparing an assessment of client and user needs, an inventory of space and equipment requirements, an analysis of site conditions (including existing buildings), a review of the relevant laws and standards and assessment of their implications for the project, and a definition of site selection and design assessment criteria.
- B. 2. Accessibility: *Ability* to design sites, facilities, and systems to provide independent and integrated use by individuals with physical (including mobility), sensory, and cognitive disabilities.
- B. 3. Sustainability: *Ability* to design projects that optimize, conserve, or reuse natural and built resources, provide healthful environments for occupants/users, and reduce the environmental impacts of building construction and operations on future generations through means such as carbon-neutral design, bioclimatic design, and energy efficiency.
- B. 4. Site Design: *Ability* to respond to site characteristics such as soil, topography, vegetation, and watershed in the development of a project design.
- B. 5. Life Safety: *Ability* to apply the basic principles of life-safety systems with an emphasis on egress.
- B. 6. Comprehensive Design: *Ability* to produce a comprehensive architectural project that demonstrates each student's capacity to make design decisions across scales while integrating the following SPC:

A.2. Design Thinking
Skills

- A.4. Technical
Documentation
- A.5. Investigative Skills
- A.8. Ordering Systems
- A.9. Historical Traditions
and Global Culture

- B.2. Accessibility
- B.3. Sustainability
- B.4. Site Design
- B.5. Life Safety
- B.8. Environmental Systems
- B.9. Structural Systems

- B. 7 Financial Considerations: *Understanding* of the fundamentals of building costs, such as acquisition costs, project financing and funding, financial feasibility, operational costs, and construction estimating with an emphasis on life-cycle cost accounting.
- B. 8 Environmental Systems: *Understanding* the principles of environmental systems' design such as embodied energy, active and passive heating and cooling, indoor air quality, solar orientation, daylighting and artificial illumination, and acoustics; including the use of appropriate performance assessment tools.
- B. 9 Structural Systems: *Understanding* of the basic principles of structural behavior in withstanding gravity and lateral forces and the evolution, range, and appropriate application of contemporary structural systems.
- B. 10. Building Envelope Systems: *Understanding* of the basic principles involved in the appropriate application of building envelope systems and associated assemblies relative to fundamental performance, aesthetics, moisture transfer, durability, and energy and material resources.
- B. 11. Building Service Systems: *Understanding* of the basic principles and appropriate application and performance of building service systems such as plumbing, electrical, vertical transportation, security, and fire protection systems.
- B. 12. Building Materials and Assemblies: *Understanding* of the basic principles utilized in the appropriate selection of construction materials, products, components, and assemblies, based on their inherent characteristics and performance, including their environmental impact and reuse.

Realm C: Leadership and Practice:

Architects need to manage, advocate, and act legally, ethically and critically for the good of the client, society and the public. This includes collaboration, business, and leadership skills. Student learning aspirations include:

- Knowing societal and professional responsibilities.
 - Comprehending the business of building.
 - Collaborating and negotiating with clients and consultants in the design process.
 - Discerning the diverse roles of architects and those in related disciplines.
 - Integrating community service into the practice of architecture.
- C. 1. Collaboration: *Ability* to work in collaboration with others and in multi-disciplinary teams to successfully complete design projects.
 - C. 2. Human Behavior: *Understanding* of the relationship between human behavior, the natural environment and the design of the built environment.
 - C. 3. Client Role in Architecture: *Understanding* of the responsibility of the architect to elicit, understand, and reconcile the needs of the client, owner, user groups, and the public and community domains.
 - C. 4. Project Management: *Understanding* of the methods for competing for commissions, selecting consultants and assembling teams, and recommending project delivery methods.
 - C. 5. Practice Management: *Understanding* of the basic principles of architectural practice management such as financial management and

2009 Conditions for Accreditation
National Architectural Accrediting Board, Inc.

- business planning, time management, risk management, mediation and arbitration, and recognizing trends that affect practice.
- C. 6. Leadership: *Understanding* of the techniques and skills architects use to work collaboratively in the building design and construction process and on environmental, social, and aesthetic issues in their communities.
 - C. 7. Legal Responsibilities: *Understanding* of the architect's responsibility to the public and the client as determined by registration law, building codes and regulations, professional service contracts, zoning and subdivision ordinances, environmental regulation, and historic preservation and accessibility laws.
 - C. 8. Ethics and Professional Judgment: *Understanding* of the ethical issues involved in the formation of professional judgment regarding social, political and cultural issues in architectural design and practice.
 - C.9. Community and Social Responsibility: *Understanding* of the architect's responsibility to work in the public interest, to respect historic resources, and to improve the quality of life for local and global neighbors

The APR must include:

- A brief, narrative or graphic overview of the curricular goals and content for each accredited degree program offered or each track for meeting the requirements of the professional degree program.
- A matrix for each accredited degree program offered or each track for meeting the requirements of the professional degree program, that identifies each required course with the SPC it fulfills.
 - Where appropriate, the top section of the matrix should indicate those SPCs expected to have been met in preparatory or pre-professional education prior to admission to the NAAB-accredited program (see also Part II, Section 3).
 - The bottom section of the matrix should include only criteria that are demonstrated in the accredited degree program or track.

In all cases, the program must highlight only the 1-2 cells on the matrix that point to the greatest evidence of student achievement. (For a sample matrix, see Appendix 4)
[NOTE: Elective courses are not to be included on the matrix.]



Austin James Poe